

AMERICAN **BUSHCRAFT: DON'T JUST SURVIVE, THRIVE!** SURVIVAL GUIDE



P.48

DETER DELAY DEFEND

KNOW YOUR SECURITY PLAN

EAT TONIGHT

3 SMALL
ANIMAL
TRAPS

HOW-TOs

4 Easy Fire Starters

DIY Bow and Arrow

Survivor's Spear

REVIEWS

Light the Night
12 Tactical
Flashlights

Fix Anything,
Anywhere
13 Must-Have
Multi-tools

Hazard4's
Poncho Villa

Primitive
Blade:
Farson Tool

The
Invaluable
Hand
Saw
P.28

SURVIVE
THE WORLD'S
**DEADLIEST
LOCATIONS**



WHAT TO
DO WHEN
**BEARS
ATTACK**



INTO THE
MIND OF AN
**ANIMAL
TRACKER**

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CONTENTS

VOLUME 4, ISSUE 4 | APRIL 2015

FEATURES

36 STORIES OF SURVIVAL: THE LYKOV FAMILY

Siberian Lessons From a True Independent Spirit

Story by Bryan Dumas

42 THE WORLD'S DEADLIEST PLACES

There Are Ways to Stay Alive in Each of Them

Story by Adam Jones

64 DETER, DELAY, DEFEND

The Three Elements to a Solid Security Plan

Story by Jim Cobb

68 THE BUSHCRAFT MOVEMENT

Don't Just Survive, Thrive

Story by Ryan Lee Price and Clint Jivoin

74 PRACTICE MAKES PREPARED

Honing Your Skills to Perfection Takes Time and Patience

Story by Larry Schwartz

82 FROM THE EYES OF A TRACKER

The Mental Game of Tracking Animals in the Backcountry

Story by Jamie L. Burleigh

URBAN

28 MODERN HAND SAWS

Not Your Same Old Hand Slicer

Story by James E. House

40 RAIN SHIELD

Hazard4's Poncho Villa

Story by Alan Stewart

112 SECRET GARDEN OF SURVIVAL

How to Grow a Camouflaged Food Forest

Story by Rick Austin

124 SMALL, LIGHT, AND FIERCE

Discreet Carry: Portable Protection in Your Pocket

Story by James E. House

BACKCOUNTRY

20 AVOID A BEAR HUG

To Survive an Encounter with a Bear, Know Your Bear

Story by Nikki Grey

24 SIMPLE CARRY-ALLS

Containers Can Be Everywhere

Story by Christopher Nyerges

34 PREHISTORIC MODERN

The Farson Blade Survival Tool

Story by Andrew Phillips

54 THE WIKI UP SHELTER

Carving Out a Home in the Wilderness

Story by Clint Jivoin

60 TRAPPING SMALL GAME

Three Basic But Effective Deadfall Triggers

Story by Christopher Nyerges

76 COOKING IN THE STICKS

How to Build a Bushcraft Kitchen

Story by Clint Jivoin

116 FIRE LAY 101

Pick the Right Fire Lay for Your Needs

Story by Larry Schwartz

HOW-TO

94 FIRESTARTERS 101

How to Make Your Own Inexpensive Firestarters

Story by Larry Schwartz

98 TRIAL BY FIRE, FIRE BY FRICTION

Creating Fire with the Bow and Drill

Story by Clint Jivoin

108 STRAIGHT TO THE POINT

How to Fashion an Effective Survival Spear

Story by Clint Jivoin

120 DIY BOW AND ARROW

How to Make Your Own Archery Set in Nature

Story by Christopher Nyerges

GEAR GUIDES

48 MULTI-TOOLS

87 TACTICAL FLASHLIGHTS

104 OUTDOOR PROTECTIVE OINTMENTS



48



87



104

DEPARTMENTS

FIRST WORDS 6

NEW PRODUCTS 10

PREPPING WITH RALSTON 14

NEWS & NOTES 16

SURVIVAL LIT 130

DEAD END 130

THE COVER:

In the wake of a calamity, be it a deadly meteor shower or a toxic nerve gas attack, being prepared to defend your family and property is of the utmost importance. Be prepared with a solid plan.

The Model 57 AR-15 in burnt bronze courtesy Yankee Hill Machine Co.; the sling courtesy A. R. Paracord; the SR-4C scope courtesy U.S. Optics; the Atlas BT10-LW17 V8 courtesy B&T Industries; the TLR-1 HL mounted light courtesy Streamlight; and the pack, boots, sunglasses, hat, gloves, and mask courtesy Voodoo Tactical.

Photo: GUS ALONZO

Image graphic editing: CHRIS PASLEY



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Ryan Lee Price
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Primitive vs. Modern

TO BE BLUNT, NATURE WANTS YOU DEAD.

We are besieged by the inherent memories of the not-too-distant past when we were frightened by the moon and learned holly berries will kill you because someone in the clan ate one that one time and died.

Nature wants your body to return nutrients to the soil to help propagate new life. That's the cycle, and we're all directly involved with it. In spite of this, we use modern conveniences to keep us out of the ground. We are survivors with tools. The tools are sometimes expensive and elaborate and oftentimes confusing, but they make life somewhat easier. This chair I'm sitting on in my office, for example, has a cloth cushion instead of being a rock in a cave. However, we often take our tools for granted, leaning on them too heavily at times. When the SHTF and our tools break, we're lost, vulnerable and exposed to the full wrath of nature. Are we masters of our tools or tied to them like dependents of absent parents? When the Internet is down for more than five minutes, do you start to look for a tall tower to leap from? That's dependency, not survival.

There's another approach to survival and it's called Bushcraft.

The Bushcraft movement is a noble endeavor rising in popularity. It harkens the adventurer back to simpler times when knowledge, skills, hand tools and good fortune was all that stood in the way of a healthy embrace with all that is wild in the world. It is an undertaking as much mental as it is physical, as the person striving to label himself a Bushcrafter is in for a quite a journey. Bushcrafting, in all its art and graceful beauty, isn't something that can be gleaned from a book, but instead, gathered from countless trials and tribulations in the backcountry, where man is pitted against unforgiving nature in the usual struggle for life and balance.

Bushcrafters use minimal primitive tools and are in touch with nature, not in the hippy way that convinces him trees are friends, but in a practical way that convinces him trees, if used properly, can keep you safe. They're not survivors in the typical sense that they are trapped against their will in a challenging situation and must rely on their wits, and knowledge of the environment, to emerge unscathed. They're survivors because they are in a challenging situation and they want to be there. Where a normal person would stumble from the underbrush famished and beaten, describing their lost week as an "ordeal," a Bushcrafter would stroll out five pounds heavier, picking their teeth with the bone of a bear they persuaded to drop dead close enough to the fire as to not be an inconvenience.

You can walk into the wilderness armed with a simple knife on your hip, a bota bag of water, and a map leading to elk migration trails hand drawn by an Inuit chief-tain... or you can buy an app, carry 60 pounds of gear and conquer the woods like a Mongolian Kahn.

The kind of survival you want to do depends on your situation and your personal set of skills. If you have a match, use it to start a fire. If you don't have a match, do you know how to make a fire anyway? **ASG**

Ryan

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WHEN ALL HELL BREAKS LOOSE

by Cody Lundin

ITEM #12-0007

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Source: luminaid.com

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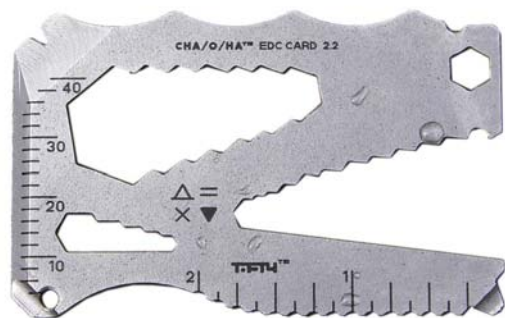
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5



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6



7. HYDRATION RESERVOIR

BPA and PVC free, the three-liter hydration pouch from Osprey Packs is made from Metalocene polyethylene, which means it is stronger than other reservoirs and is able to handle hot water. The reservoir features a "HydroStatic" backer that keeps the shape of the reservoir no matter how little water is in it. The hose is 1/4-inch with a 180-degree shutoff valve. The large mouth opening provides easy fill and access for cleaning, while the anti-microbial material prevents bacteria and mold buildup.

Specifications:

- Weight: 11 ounces
- Dimensions: 16 x 7 x 3 inches
- 3/4 turn cap
- Low-profile handle
- BPA and PVC free
- 100 ounce capacity

Source: ospreypacks.com

MSRP: \$36

8. WOMAN'S PACK

Lightweight and comfortable the Ariel 55 is a women-specific backpack with adequate space and organization for weekend or weeklong trips lasting two to five days. It comes in three sizes, XS, S and M; it has a sleeping bag compartment, dual-access side

pocket and is compatible with an external hydration reservoir. It comes in red, blue or wheat (shown).

Specifications:

- XS: 2,990 cubic-inch capacity
- S: 3,173 cubic-inch capacity
- M: 3,356 cubic-inch capacity
- Dimensions: 31(XS), 32 (S), 34 (M) x 12 x 14

Source: ospreypacks.com

MSRP: \$259.95



9. BG ULTIMATE KIT

A survival kit built for hostile environments. Stick the Ultimate Kit in your backpack and hope you never have to use it. If you do, the 16-piece kit has everything you need to survive, including a miniature multi-tool, flashlight, saw, signaling mirror, matches, fire starter, snare wire, and survival instruction... all in a nylon bag with a waterproof zipper.

Specifications:

- Dimensions: 4.5 x 5.0 inches
- Weight: 4.2 ounces
- 16 items
- Waterproof bag

Source: gerbergear.com

MSRP: \$59.99





10

10. KEEP SHARP

A comprehensive sharpening kit from Gatco Sharpeners, this will sharpen most knives in your collection, from serrated blades to kitchen cleavers. It utilizes diamonds to obtain a razor-sharp edge. The kit comes with a six-angle clamp that secures your blade while sharpening.

Includes:

- Six-angle knife clamp
- Coarse monocrystalline diamond hone
- Medium monocrystalline diamond hone
- Fine monocrystalline diamond hone
- 1200 grit ceramic finishing hone
- Special serrated knife hone
- Two ounces of honing oil

Source: gatcosharpeners.com

MSRP: \$119.99

11. POCKET SHIELD

The Pocket Shield is a flexible, modular platform which allows an individual to securely and discreetly carry a small defensive implement (such as a firearm, knife, flashlight, multi-tool, etc.) inside the front pocket of jeans or dress pants without visible pocket clips or showing the profile of the item. The platform is made from flexible, high-strength polymer that conforms to the shape of the user's body for all-day carry comfort.

Specifications:

- High-strength polymer plastic
- Comes in a three-pack
- Black, grey, coyote brown

Source: raven-concealment-systems1.mybigcommerce.com

MSRP: \$59.99

12. THE T.A.S.K.

The T.A.S.K. (Tactical Apocalypse Survival Kit) has been designed by Lansky to serve as the core of your emergency bag. These tools were selected to handle a number of situations including, escape from dangerous circumstances and basic survival during a variety of natural disaster or apocalypse scenarios. The T.A.S.K. is housed in a 20L tactical backpack which allows you to "bug out" quickly. Features padded back panel, a large main compartment plus a front pouch, both with organizational gear pockets, Molle attachments, adjustable hip and sternum straps, water bottle holder and compression straps to lock down the load.

Includes:

- Multi use battle axe
- 20 function multi-tool
- Easy-grip knife
- Blademedic sharpener
- The puck — dual grit sharpener

Source: lansky.com

MSRP: \$199.99



12

CAN'T GET ENOUGH ASG? WHEN YOU'RE NOT OFF THE GRID,
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PREPPING WITH RALSTON

BY TIM RALSTON

Timothy Bryan Ralston is an American inventor, veteran, adventurer, author and movie consultant for his expertise in the field of survival and preparedness education. He is best known for his appearance in the powerful motivational film, *The Compass*, and for being the international spokesperson in the launch of NatGeo's No. 1-rated program, *Doomsday Preppers*.

Staying Safe in a Big Crowd



There are many dangers that go along with a crowded event, especially when it is populated to the extreme. Not only does it bring risk of harm to the attendees, but in fact to the entire city hosting the event as well. Every year thousands (or even millions) of people will flock to a destination all at the same time. From sporting events to political gatherings, there are certain activities that cause a massive draw of interest.

Do these events help the region economically? Absolutely. Do these events unintentionally put residents in harm's way? Yes, without a doubt and for these reasons...

Driving Conditions

When a large number of extra people come to a city, it causes the

roadways to become flooded with cars. This makes driving conditions even more dangerous than usual. Any time there are that many out-of-town motorists unfamiliar with an area, combined with drivers stressed by the congestion, accidents are bound to happen.

Another reason why the roads become a hazard is due to cell phones. There are many vacationers who use their handheld devices to locate restaurants, attractions, or to figure out where they are going, all while driving! Mix this with the thousands of residents who are also just as distracted, and it is a recipe for disaster.

The best way to ensure your safety if a major event came to town would be to avoid the roads alto-

gether. Yet if there was no way of getting around driving in these crowded regions, do so with extra caution and heightened awareness. In addition, consider utilizing public transportation and your knowledge of the back roads. Make sure you know where you are going. I know several people who have had trouble because they got lost and ended up in bad neighborhoods.

Increased Risk of Disaster

Any time there is a major event bringing a substantial number of people into one area, there is a higher risk of threat. It is crucial residents stand prepared for anything and everything that could occur.

The major issue for those who already prepare is that a disaster

would be much more chaotic with the overcrowded population. It is imperative you take into account that your normal preparedness strategies could be less effective. Use these suggestions in advance.

- > Practice your family emergency plans (meeting places, contacts, procedures).
- > Formulate alternative escape routes.
- > Provide maintenance to your car so

- > Be aware of your surroundings, including people, exits and objects.
- > Avoid being pinned in an area that would be difficult to escape from during an emergency.
- > Try to stay with your group. Create a meeting place just in case of separation.
- > Pay attention to the crowd around you and avoid sketchy looking people.
- > Keep your important personal belongings (money, keys, cell-



it is reliable in case you need to flee. Also, keep your gas tank filled and a proper car kit inside.

- > Go through your preparedness items to see if any need to be updated (water rotation, out-of-date food products, children's clothing in BOBs, etc...).
- > Prepare your home in hopes it will be a safe haven if a disaster were to occur. Remember to address the five basics - water, food, shelter, energy and self-defense.

Within a Crowd Safety Tips

If entering a crowded scenario (sporting event, concert, festival, etc...) there are certain precautions to take to help keep you safe.

- > Be careful where you park your car, try and park in a well-lit, busy area.

phone) on your body, and not in a separate bag.

- > Wear clothing that does not attract a lot of attention.
- > Don't flash money around, or wear expensive jewelry.
- > Putting a rubber band on your wallet and storing it in your front pocket can help keep it from being stolen.
- > Have your cell phone fully charged.
- > When in conversation with someone you do trust, be aware of people around you who may be listening.
- > Avoid drugs and alcohol, and stay hydrated.
- > Stay on your feet if chaos ensues to avoid being trampled.
- > Be careful of strangers; don't give out too much information.
- > Use ATMs during the day when there are people around. **ASE**

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Mississippi Building Huge Storm-Safe Rooms

The *Northeast Mississippi Daily Journal* reported two storm-ready safe rooms are planned for Tupelo parks, which could shelter more than 1,100 people per giant dome-shaped room. The safe rooms, which will be more than 6,000 square feet each, will be engineered to withstand wind speeds up to 250 mph. Footing the \$2.5 million bill is mostly the Federal Emergency Management Agency and the Mississippi Emergency Management Agency, with a bit of help from the city of Tupelo. The safe rooms should be completed in 2016.



PHOTO BY THINKSTOCK

Tornadoes

Tornadoes are created from powerful thunderstorms, and can devastate a neighborhood in seconds with whirling winds reaching 300 miles per hour. Here you'll find a "starter list" of tools and open data that can support communities in the event of a tornado. If there are additional free tools or open data that can be shared, please email us at disastertech@ostp.gov.

FEATURED DATA

Database of Tornado, Large Hail, and Damaging Wind Reports Composite track information regarding tornadoes, large hail, and damaging winds for the period 1950-2006.

Severe Weather Data Inventory (SWDI) This is an integrated database of severe weather records for the United States.

United States Tornado Touchdown Points This map layer shows tornado touchdown points in the United States, Puerto Rico, and the U.S. Virgin Islands, from 1950 to 2004.

[See More](#)

TOOLS



Twilio is open sourcing a **Rapid Response Kit** for developers to stand up communications solutions during an emergency response, featuring SMS-powered volunteer signup and survivor



TaskRabbit Needs for First Responders is a web portal offering a real-time marketplace to connect local service providers with those that need assistance, without any fees. Those interested in



The **American Red Cross** provides different disaster preparedness apps in English and Spanish to deal with first aid emergencies, weather emergencies, and natural disasters. Users can download the

White House Disaster Data Portal

We can't prevent a disaster, but we can be prepared, including through data. Sure, data might sound like a snoozefest, but the White House is behind the data portal called disasters.data.gov, where you can get everything from earthquake feeds, National Weather Service Storm Prediction Center advisories and warnings, a wildfire situation map, sea-level rise/flooding impacts and much more. It's sort of a one-stop spot for apps, tools and other prep necessities.

“The tsunami woke up the scientists and academics. We are now equipped to meet any future case of a tsunami. We have moved forward in 10 years with the Indian Tsunami Early Warning Centre and have had successful trial runs of the system. But now as we reach the 10th anniversary, are we going back into slumber?”

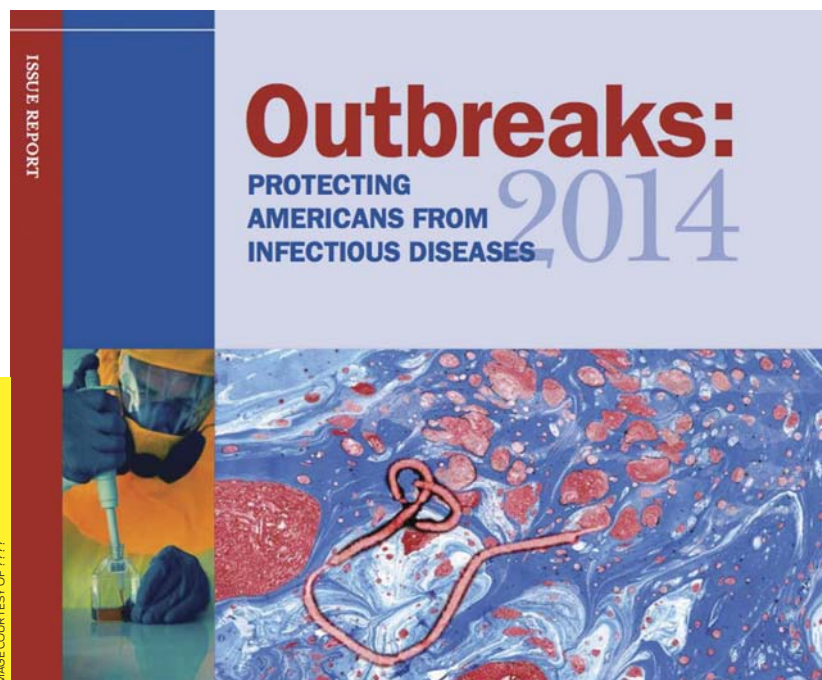
— DR. N. P. KURIAN, DIRECTOR, NATIONAL CENTRE FOR EARTH SCIENCE STUDIES, THIRUVANANTHAPURAM, SPEAKING AT DECEMBER'S IOTSUNAMI 2014, ACCORDING TO *THE HINDU*. THERE ARE CONCERNS WITHIN THE SCIENTIFIC COMMUNITY THAT ACTS OF PREPAREDNESS ARE HAPPENING LESS.

PHOTO BY THINKSTOCK



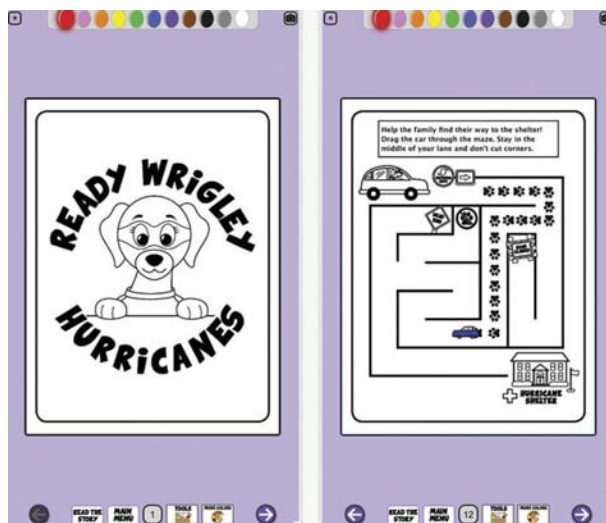
FAA Drone Laws Not Due Until 2017

As it turns out the FAA has yet to decide on commercial drone regulations, which originally was supposed to happen late 2015. But now it looks more likely to be 2017, which is bad news if you're a company itching to try out drone technology — such as Amazon.



Can Your State Prevent an Outbreak?

Outbreaks 2014: Protection Americans from Infectious Diseases report by Trust for America's Health and Robert Wood Johnson Foundation studied every state and its ability to prepare for emerging threats and control infectious diseases, such as Ebola. Arkansas did not fare well while Maryland, Massachusetts, Tennessee, Vermont and Virginia did.



Pillowcase Project and an Emergency App for Kids

The American Red Cross created the Pillowcase Project, a preparedness program aimed at grades 3-5. It teaches children about personal and family preparedness as well as hazards and even basic coping skills. Volunteers from the Red Cross get them thinking about disaster preparedness and then provide a pillowcase with the goal of them using it to create their own emergency supply kit. According to the Red Cross, the New Orleans chapter developed the project after Hurricane Katrina, and in 2014 expanded to include most states in the U.S. and Puerto Rico. The program is sponsored by Disney. Meanwhile, the Ready Wrigley Activities app from the Centers for Disease Control and Prevention teaches children about what to do in an emergency situation by acting as a coloring book, storybook and games/activities tool. Download it from the iTunes store.

FBI WANTS ETHICAL CYBER HACKERS

Here's an interesting job posting from the FBI: It's looking for those with cyber expertise to potentially become Cyber Special Agents who investigate cyber crimes (think hacking, data theft and botnets). To quote the job posting, "Preferred backgrounds include computer programming and security, database administration, malware analysis, digital forensics, and even ethical hacking." The FBI and government are expected to be seeking more candidates for this type of work for years to come.

FBIJobs @FBIJobs • Dec 29

"The FBI seeks highly talented, technically trained individuals who are motivated by the FBI's mission." [#Cyber bit.ly/1CQwZf5](https://bit.ly/1CQwZf5)

YouTube



FBI Hiring Cyber Experts

Robert Anderson, executive assistant director of the FBI's Criminal, Cyber, Response, and Services Branch, talks about initiative to hire cyber experts. Learn...

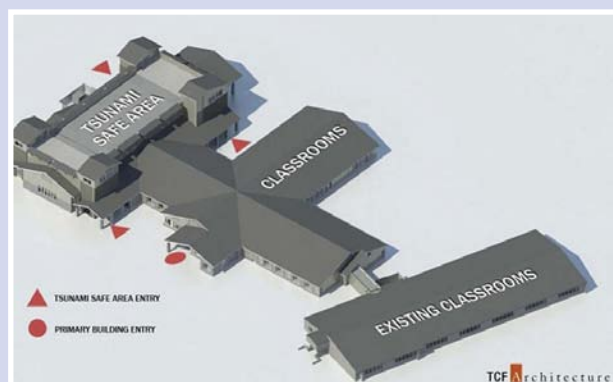


IMAGE COURTESY OF STATE OF WASHINGTON DOE

FIRST VERTICAL TSUNAMI EVACUATION BUILDING

Ocosta Elementary School along the Washington coast is set to have the first vertical tsunami evacuation structure in the United States. Due to be finished in late 2015, the evacuation structure will be atop the new gym and multipurpose building. It can also handle an earthquake of 9.0, noted King 5 News, which also said the Shoalwater tribe is building a casino parking garage with a vertical evacuation platform.

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Avoid a **BEAR HUG**

TO SURVIVE AN ENCOUNTER
WITH A BEAR, KNOW YOUR BEAR

STORY BY **NIKKI GREY**

Photography by Robby Barthelmess, Jim Nelson, and Jerry Apkers
Additional Photography Courtesy Colorado Parks and Wildlife

You're out in the wilderness, enjoying the quiet, the scenery and the fresh air. Suddenly, you see it. About 100 feet away stands a beast that weighs hundreds of pounds and has razor-sharp teeth that could cut into your flesh like butter. The bear's big, black eyes lock on yours and you know: What you do next could determine whether you live or die.

So, what do you do? According to experts, it often depends on the type of bear.

BLACK BEARS

"Black bears are not aggressive bears," says Jerry Apker, carnivore biologist at Colorado Parks and Wildlife. "It's very rare for them to behave aggressively and, when they do, it's possibly about food and sometimes about young, although I think that tends to be overblown."

The black bear researcher says he doesn't have experience with grizzlies but believes grizzlies are more aggressive. The smaller bears with a pointed dog-like face and one-to-two-inch front claws tend to respond to fear by running or climbing a tree, Apker says; grizzlies may respond by charging.

Male black bears (male bears are larger than females) tend to weigh less than 300 pounds, although exceptionally large male black bears can reach 600 pounds. They range in height from about two to three feet at the shoulders. They live in forested areas in North America. Despite the name, black bears can have black, brown, cinnamon or even blond fur.

These bears tend to be more active in the fall, because they go into a "feeding frenzy" to put on weight, enabling them to survive winter. During this time they tend to be active from 20 to 22 hours per day; during summertime they tend to feed between dawn and dusk, Apker says. He recommends being aware of your surroundings if you're in bear territory and, if you see a black bear, make sure it knows you're there, too. You don't want to surprise it.

"As with mountain lions, with black bears, too, you can prompt a sort of predatory response in an animal that's running away from you." Instead, face the bear and, when you can, glance behind you to see where you're going as you back away slowly.

"For black bears, I think you do want to assert dominance," Apker says. "If you know you're in black bear country and that's all there is, I think asserting a demeanor that says 'I'm the most dangerous animal in this situation and you want to get away from me as much as I want to get away from you and if we get in a fight you're going to lose.'"

Apker says black bears tend to be submissive but, just like people, bears' personalities can differ; you may encounter some bears more aggressive than others. If a black bear charges you, stand your ground.

"Chances are it's going to be a bluff charge and the bear will either veer away at the last moment or will stop anywhere between 10 to 15 to 20 feet out and will stop and be huffing,



Though black bears are not normally aggressive bears, any animal, if properly provoked, will become aggressive in a moment's notice, black bears included.

[LEFT] For black bears, asserting dominance gives you a good chance to survive an encounter.

which is kind of a whooping sound, and it just means they're upset and are aggravated by your presence and are trying to assess your intentions."

He recommends using bear spray, or pepper spray as a back up. And be careful the wind doesn't blow it back on you. But what if, after standing your ground, using spray and whatever else, the bear still attacks?

"I've never been a believer of the lay down and play dead scenario," Apker says. "I've always believed in a situation like that you want to fight back for your life with the mindset 'This is either going to be the bear or me.'"

"With black bears, I say you fight, fight, fight, with whatever means you have," he says. "Sticks, pocketknives, ballpoint pens. You can stick it in its eye. You want to do whatever you can to survive."

Avoid a **BEAR HUG**



[ABOVE] Grizzly bears can be as much as 850 pounds and can run 40 miles per hour.

[TOP RIGHT] The best method of survival is to freeze in your tracks, slowly outstretch your arms and begin to speak calmly to the bear. Whatever you do, don't fight back.

[RIGHT] If attacked by a grizzly it is time to curl up on the ground and play dead.

[OPPOSITE, TOP] Polar bears are the largest bear and some can be more than 1,700 pounds. To avoid a polar bear attack, it is best not to be seen by them.

BROWN/GRIZZLY BEARS

The heaviest male brown bears, also referred to as grizzly bears, weigh as much as 850 pounds and stand tall, as high as three to four feet at the shoulders. They can be found in living in forests, meadows and arctic tundra. They live in North America, Western Canada, Alaska, Wyoming, Montana, Idaho and Washington, according to Defenders of Wildlife.

These concave-faced bears range in color from blond to black. Larger than black bears, with longer front claws that are two to four inches long, grizzlies also can be distinguished by the large shoulder hump.

"The most important thing probably hiking in grizzly country is to stay alert... to learn a little bit about the bears," says Doug Peacock, grizzly bear advocate and author of *Grizzly Years: In Search of the American Wilderness* (Holt Paperbacks) among other grizzly and wilderness-related books.

Peacock says grizzlies tend to feed at night and sleep during the day, and that most grizzly maulings are caused by humans who are too close to mothers with cubs.

Similar to Apker's advice, Peacock recommends those in areas where bears may be to keep a lookout for bears, and to stay away from carcasses a bear may be protecting as food.

So, what do you do if you see a bear?

"First of all, freeze," he says. "Don't jerk, don't move. The second thing I do is turn my head to the side and I stretch my arms out... and after a while I might just speak very quietly to the bear to show that I'm a human being and that I'm calm."



Don't run. A grizzly can run 40 miles an hour. Even if you're an Olympic athlete you can't outrun it.

Peacock knows someone who shouted from 200 feet away and was charged after.

After running, he says, "the second worst thing you can do is yell. 'You have to stand your ground and not move when the bears are charging.' Although he's been charged, Peacock has never been attacked. If he were attacked, though, he wouldn't fight back. 'I would curl up on the ground at the last moment,' he says. 'Hit the ground, protect your head and neck and play dead.'"

Peacock says the bear will likely hit you once in the neck and, if you're not perceived as a threat, lose interest.

"Don't get up right away," he says. "You might have to wait 45 minutes because that mother grizzly might be watching and if you move, she might just get up and maul you again."



POLAR BEARS

Polar bears live in arctic and sea-ice areas in Alaska, Canada, Russia, Greenland and Norway. Standing on two feet, adult males can be as tall as eight to nine feet and weigh 700 to 1,300 pounds, some reaching as much as more than 1,700 pounds.

"Polar bears are predators and should always be treated as dangerous," according to the U.S. Fish and Wildlife Service's safety guidelines on polar bears.

It's best to not be seen by a polar bear by avoiding them altogether. Steer clear of whale or other marine carcasses a bear might be protecting as food.

Travel in groups and never chase or try to herd or separate polar bears. If the bear stops to sniff the air, sway, or lower its head below its shoulders with ears pressed back, it may be aware of your presence. If the bear feels threatened, it likely will huff or snap its jaws together. It may also make eye contact with the threat.

If you are in the bear's path, or between a mother and cubs, get out of the way.

According to the U.S. Fish and Wildlife website, "if the animal continues to approach and you are near a vehicle, leave the area. If no vehicle is available, do not run; slowly move to a safe shelter. If no safe shelter is available, stand your ground. Gather people together in a group and/or hold a jacket over your head to look bigger. If the bear continues to approach, shout or make noise."

Fight back, unless it's an attack by a mother defending her cubs. If that's the case, remove yourself as a threat to the cubs instead. **ASG**

"POLAR BEARS
ARE PREDATORS
AND SHOULD
ALWAYS BE
TREATED AS
DANGEROUS."

URBAN BEARS

In all situations where bears are nearby, you want to make sure food is properly packaged and not in a position that would draw attention. You also don't want food near your tent, if you're camping.

But, what would you do if you saw a bear hanging out on your deck, or worse, in your living room? Carl Lackey, game biologist at the Nevada Department of Wildlife, calls bears that are habituated to people "urban bears." "They are very bold and comfortable in human settings," says Lackey, who deals with black bears in Nevada. "If you wave your arms, the bear just looks at you like, 'Hey, you're disturbing the peace. Be quiet.'"

People who live in forested areas with bears nearby are at risk (especially if they don't have bear-resistant trashcans), along with those who plant fruit trees in their yards. These bears are not afraid of people, generally, because they've had positive experiences such as people taking pictures or feeding them.



Despite this, surviving an urban bear encounter calls for similar action as any other black bear.

"Remain facing the bear and try to back away to somewhere safe," Lackey says, noting that you should yell at the bear or speak in a loud voice.

Lackey and the Nevada Department of Wildlife combat urban bear complications through its Karelian Bear Dog Program. The program selects and trains Karelians to work with bear-management workers and people living in bear territory.

"The dogs haze and harass the bears, and the idea is to modify that behavior so they're not so comfortable around people."

Lackey says the bears don't want trouble any more than we do, but people should still be cautious. "You have to treat them with respect," he said. "Because even black bears can be very dangerous and black bears do kill people."



Simple

CARRY-ALLS

CONTAINERS CAN BE EVERYWHERE

Story and Photography by **Christopher Nyerges** | Additional Photography by Dude McLean

From the beginning of time mankind has needed something in which to carry the stuff he has collected, from berries in the bush to spare meat on a trek. While the container may not be as important at home or in camp, it becomes immediately important once you hit the trail.

Backpacks, daypacks and fannypacks are ubiquitous at the discount stores, backpacking stores, yard sales and sporting goods stores. You should have several and keep at least one loaded with a survival kit so you just grab it and go if it ever becomes necessary.

You don't want to be running down the trail or evacuating the city with your most important possessions in paper or plastic bags. In cases where there is urban unrest, you might not get very far with a pack on your back either, since it makes you a target. The looters will say, "Hey, there are some supplies on that guy's back I could use." In some cases, a pack would therefore be useless, and you'd need to carry whatever gear you could in an inconspicuous way: in vest pockets, pants pockets, around your neck, strapped to your leg, or via inconspicuous fanny packs, etc.

PANTS PACK

This is one of the easiest make-shift packs. It is easiest done with pants. First, tie off the legs, then fill the legs with things you need to carry – ideally soft things, since the legs will be your pack straps. Then fill the rest of the pants with your gear. Use a belt or cord to tie up the waist, and tie the end of each pant leg to the waist. You can adjust the straps as needed, but otherwise you're ready to go.

You can also use a long sleeve sweat shirt for this. Even a button-up shirt will work, though there are a lot more holes where you might lose small things. I've done this when I needed a pack and I made one from my button-up long-sleeved shirt. I stripped pieces of yucca leaves to make the string to tie it all together.

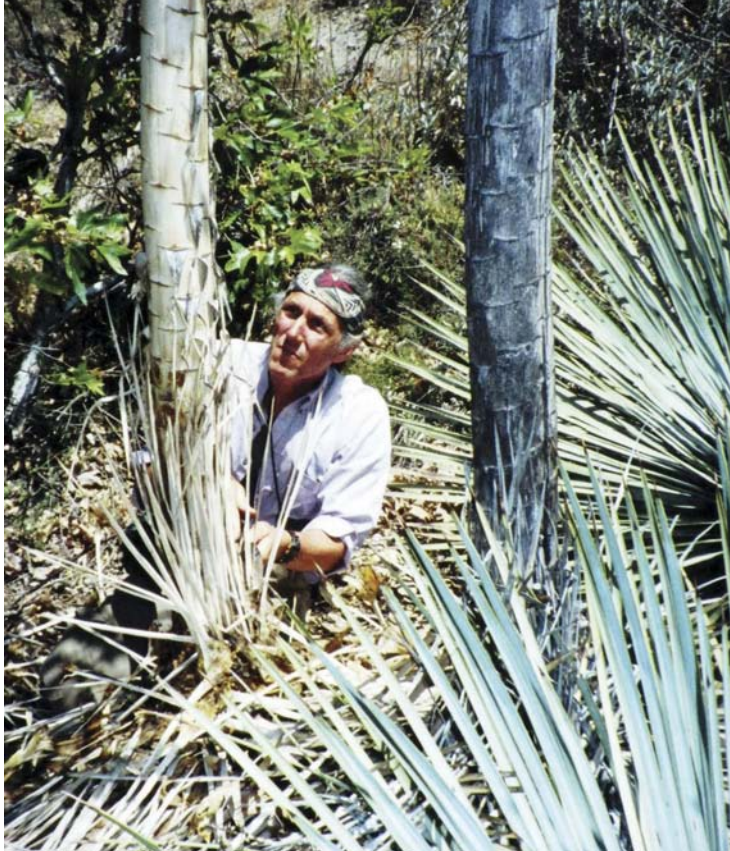
AGAVE AND YUCCA CONTAINERS

Agave and yucca plants grow throughout the entire western half of the U.S., and their many relatives can be found throughout most of the world as well.

My first exposure to one of these quiver-like containers was a night in Temple City, California, when I was teaching a survival skills course at the Deer Tribe dojo run by Harley Swift-Deer. After the class, Harley brought me a quiver with some weapons to look at. He said the container came from Africa, and by the vascular bundles on the outside, it was clearly a relative of either the agave or yucca plants. I was fascinated by it because it was such an obvious use for a very common material in the wild, and I'd never seen a quiver made from it before.

I then began to gather agave and yucca flowering stalks after they died and dried, and hollowed them out. I found that these stalks were easiest to hollow out by simply using a knife and a straightened-out metal clothes hanger. I worked a little at each end of the yucca or agave stalk, until I had an opening all the way through, and then I just continued to remove the soft insides. Once most of the soft pithy inside was out, I would continue to work the inside with a long stick to get it as clean as possible.

There are many possible ways to add a strap to such a container, depending on your available supplies and how you intend to carry it. Most of my carrying straps were very simple. I'd drill two small holes into one side of the tubular container, one towards the top and one closer to the bottom. Then, I took a suitable length of leather cord and tied a large knot on one end. I then ran the cord through the hole closest to the bottom, from the inside and



[ABOVE] The best time to gather and use agave and yucca plants to make containers is after they have died and dried.



[LEFT] Hollowing out a yucca stalk is relatively easy.

pulled it out. The knot would keep the cord in place. I then put the cord into the upper hole from the outside, and from the inside I would tie another knot. This secured the cord to the agave container and the strap was done.

Finally, I would tie a piece of leather to the bottom. Any other suitable material would work for a bottom. These days, I just carefully cut a smaller piece of the yucca stalk, and plug the bottom of the quiver that way. Usually, if my measuring is right, I don't even need to use any glue.

Simple Carry-Alls

When I have taught others how to make such a container during some of our field trips, a few guys always wonder if they can avoid having to make a bottom by simply hollowing out the agave (or yucca) stalk from one end. Yes, it can be done, but it takes so much longer to hollow out the tube. If you only intend to use such a container for arrows, then this works fine since you can stick your arrows, points down, into the thick fibrous material of the inner agave stalk. In fact, I have seen some old authentic yucca quivers made just this way. But for general purposes, I recommend you hollow the stalks out from both ends and then add a bottom.

BIRCH BARK DESIGN

If you live in an area where you can obtain birch bark, here is a simple design for making a bowl, or even a pack. You will need a knife, and probably scissors, thread, and a needle to do this well. Remember, you can also use the bark from fallen birch trees as it “keeps” for a long time after it has fallen. Birch bark lasts a long time, and if you work it carefully, you can bend and fold it into the shape of your bowl or pack.

AFRICAN BAG

Here's a simple bag design that I first saw in the pages of *Wilderness Way* magazine years ago. It was described as a man's bag from a certain tribe in Africa. Its beauty is in its simplicity: One piece of leather sewn up by the sides. There is no top flap, just one piece of leather folded in half with a slit for entry. I use bags like this on the trail for collecting mugwort leaves for tinder and for other trail needs.

At some of our weaving classes we have students make one of these from old canvas, pants fabric or leather (rawhide or tanned). Each student first makes a pattern from paper and then traces the pattern onto the fabric or leather and then cuts it out. The sides are sewn up, and the carrying strap can be shoestrings, parachute cord, leather, braided fiber, etc.

SIMPLE ROUND POUCH

This is a simple carrying device for tobacco, seeds, coins, or other small items. It can probably be made large enough to carry something the bulk of a basketball, but this design seems to be best for smaller loads.

Begin by cutting a round piece of fabric or leather. The simplest form of this pouch involves gathering the edges up and tying it with a cord. Or, you can punch holes around the edge, and string it with a cord. This secures the cord to the



[TOP] Once hollowed out, the yucca stalk is capable of carrying a wide variety of items. Inset: It is recommended both ends of the stalk be hollowed out and a cap added to one end.

[TOP RIGHT] Wood can be used for a variety of packs, bowls, cups and canoes.

[MIDDLE RIGHT] Simple pouches can be made from cloth or leather.

[ABOVE] The African Bag is nothing more than a piece of leather sewn up on the sides without a top flap.

[RIGHT] Cups can be made by scraping and burning out the wood from a fallen tree.



pouch, and allows you to have a way to open the pouch only as much as needed.

THE WORLD IS FULL OF CONTAINERS

Obviously, you need something in which to carry your gear when you're on the road, and on the move. If you hadn't taken the time to purchase a fine pack or other container, remember that nature provides well, assuming you take the time to learn the required skills.

Besides the ideas for containers already mentioned, wood, clay and gourds are three more raw materials that have been used for millennia.

Wood can be used for packs, bowls, cups, canoes and dozens (if not hundreds) of other possibilities. In the photos you can see a large wooden slab which I carved and burned into a salad bowl. I always look for the desired shape in wood first and then I just carve away everything that doesn't look like a salad bowl, or a cup, or whatever it is that I "see" in the wood. Note the oak cup and alder bowl in the foreground, both made by burning and carving a burl.

Burls are very common, and you can always find one on a fallen tree. I never cut them off live trees because that might harm the tree. I then scrape and burn and scrape and burn, sometimes carefully doing this for hours until I have my bowl or cup.

Working with clay does not provide a "quickie" container, but clay has provided generations of people with all the bowls, cups and cookware they needed. You need to locate the clay, clean it of all foreign matter and then make your pots and bowls. You then dry it thoroughly, and then fire it in any of the variations of primitive kiln. The details of this have been widely published in such journals as the *Bulletin of Primitive Technology*, and such books as *Earth Knack: Stone Age Skills for the 21st Century* by Bart and Robin Blankenship (Gibbs-Smith, Utah, 1996). Additionally, nearly every ceramics teacher in every high school and college can tell you about how to make pots and bowls "from scratch." Use your local resources.

Gourds have also been used for millennia as water containers, bowls, cups, scoops and more. Perhaps the easiest way to introduce yourself to the art of gourdcraft is to purchase several of the hard-shelled gourds from a farmer's market and simply experiment with making large spoons, cups and bowls. Though this has been widely discussed in craft and survival books, one of my favorite references is Ellsworth Jaeger's *Nature Crafts* (Macmillan Publishing Co., New York, 1949). **ASB**

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K. HOUSE PHOTO

Modern Hand Saws

NOT YOUR SAME OLD HAND SLICER

Story and Photography by **James E. House**

Knives have a place in the kits of all who enjoy activities such as camping, hunting and hiking. On many occasions it is necessary to cut wood, food, or other materials and a good blade is indispensable. Currently, there is a great interest in survival equipment and techniques, as so well illustrated by this publication. One of the items that is the focus of much attention is the knife, loosely referred to as a survival knife. These tools with large blades can perform many tasks and are often employed in cutting wood of rather thick dimensions by hacking or chopping. This does work, but there is also another way. In many

cases it is both faster and quieter, which may be important if the worker wishes to be undetected.

One of the most useful items and one that is easily portable is a saw. Makers of outdoor equipment, especially cutlery, also produce small folding saws. In some cases, the blades are interchangeable and are available with more than one blade pitch. A coarse blade is best for cutting wood whereas a fine blade works best on plastic or bone. Saws are available from dozens of manufacturers of outdoor equipment so it is impossible to describe more than a small sample of what is available. The saws I chose are among those that are readily available in many stores.

[TOP]
Cutting a piece of seasoned wood about 2 inches in diameter is much easier with a saw than by hacking with a knife.



Most folding saws have blades that lock in position both when closed and when opened. Some have a blade that locks with the same type of lock back that is common on folding knives. Others have some sort of push button release on the side. Moreover, folding saws are available with blades that vary considerably in length. The shortest I have tested has a blade measuring only 4.4-inches in length and the longest measures 7 inches in length. Folding saws are available for as little as \$10, but some sell for around \$50. Within this range of size and price, there is a saw appropriately sized for any survival kit or pack. Obviously, I have not tested all models available, but some have come my way and I like them.

USING A FOLDING SAW

For those who are unaccustomed to using a small folding saw some general hints may be useful. First, most folding saws cut on the pulling stroke which is necessary because the blades are thin and flexible. If one were pushing the saw with considerable force and the blade happened to become stuck, there is a very real possibility of slight sideways motion bending the blade. Second, small saws should not be

used with great vigor. Cuts should be made slowly and deliberately. Cutting a piece that is allowed to sag as the cut gets deeper will lead to the blade being pinched. A rigid saw blade may be forced into the cut, but a thin, folding blade is too easily bent to use force. Second, match the saw to the task. If you want to cut six-inch logs to be split into firewood, get a large bow saw. However, if you want to cut some saplings for a frame on which to lay foliage for a shelter, even a very small folding saw will do the job. All of the saws tested have blades made of stainless steel so maintenance is not a significant issue.

A small sample of folding saws includes (left to right) the Outdoor Edge, Gerber Exchange-A-Blade, KutMaster Crush and Gorilla Gear models.

Characteristics of Some Folding Saws

Model	Weight, oz.	Closed, in.	Blade, in.	Open, in.
Gerber Exchange-A-Blade	5.5	8.1	6.1	14.2
Gorilla Gear	7.4	9.4	7.0	15.7
KutMaster Crush	9.5	8.2	6.6	11.6
Outdoor Edge Flip n' Zip	2.3	5.0	4.4	9.4

Modern Hand Saws



"THIS ULTRA COMPACT SAW WEIGHS ONLY 2.3 OUNCES, BUT IT HAS A BLADE WITH AN AGGRESSIVE TOOTH DESIGN THAT READILY CUTS THROUGH BRANCHES AND SAPLINGS THAT ARE AS LARGE AS AN INCH IN DIAMETER."

The diminutive Outdoor Edge saw features a lock back mechanism.



The Gerber Exchange-A-Blade comes with coarse and fine blades and a sturdy sheath that has a pocket for the extra blade.

OUTDOOR EDGE FLIP N' ZIP

The smallest of the saws in my equipment is the Outdoor Edge Flip n' Zip, which has a blade that measures only 4.4 inches in length. This ultra compact saw weighs only 2.3 ounces, but it has a blade with an aggressive tooth design that readily cuts through branches and saplings that are as large as an inch in diameter. This little marvel is as compact as the average folding knife and features a back lock. The textured aluminum scales provide a good grip and as long as the saw is not used on stock outside the range for which is suitable, it will prove to be a most welcome addition to the pack or survival kit. Because it so small and light, there is no excuse for not taking this saw *and* a large knife

On the Gerber Exchange-A-Blade saw, the lock is the large silver button that must be depressed to open or close the saw.



on an outing. For belt carry, the Outdoor Edge comes with a pouch sheath with a Velcro® closure. Retail price of this saw is approximately \$20.

GERBER EXCHANGE-A-BLADE

The Gerber Gear Exchange-A-Blade is an excellent saw that not only has interchangeable blades, it also

comes with two blades. One is coarse and it is suitable for cutting wood, but the other has fine teeth. The blade with fine teeth is suitable for making more precise cuts and notches such as those needed in making joints or fitting pieces together. The Gerber saw has a lock that holds the blade securely in both the closed and open positions. It

is activated by a large spring-loaded push button at the forward end of the handle. Removing a blade involves loosening a knurled knob on the side of the handle opposite to where the locking button is located.

The conveniently sized handle on the Gerber Exchange-A-Blade is made of a rigid plastic. With a blade length



On the Gorilla Gear saw, the blade is locked in the open position by a hook pulled into place by means of a pivoted lever.



The blade of this older Gerber saw is locked in place by the same type of lever found on many locking blade knives.



The blade lock on the KutMaster Crush saw is the pushbutton on the right that locks the blade in both the closed and open positions.



A large knurled knob must be removed for the blade to be changed on the Gerber Exchange-A-Blade saw.

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Modern Hand Saws



11.6 inches. Given the size and weight of the Crush, it is by no means my first choice for carry or survival use, but it would be a good choice for having in a cabin or other fixed location. The Crush is built like a tank, and it performed very well in cutting tests and with a retail price of about \$20, it is a good value.

GORILLA GEAR

The Gorilla Gear saw is of rather large size, but it is convenient to use and the rubber-coated handle provides a secure grip. There is no lock to hold the blade in the handle, but after it is open a wire loop attached to a pivoted lever pulls the blade into the fully open position and holds it securely. Blade length on

of 6.1 inches and a weight of 5.5 ounces, the Gerber is a medium size model. Packaged with the saw is a sheath that holds both the saw and the extra blade. Retail price of the Gerber is approximately \$20, and the fact it comes with two easily interchangeable blades makes it a good choice for many tasks.

KUTMASTER CRUSH

With a weight of 9.5 ounces, the KutMaster Crush is the heaviest of the saws in my collection. However, it has a very rigid aluminum frame with the handle section covered by a rubber-like material that really sticks to the hand. The Crush has a blade length of 6.6 inches and when opened the overall length is

the Gorilla Gear saw is 7.0 inches and the edge is designed to cut wood. This saw is available for around \$10, which makes it the least expensive saw that I have. Weight of this model is 7.4 ounces so it is easily portable. For someone assembling a survival kit for the lowest possible cost, the Gorilla Gear might just be what you are looking for. My preference would be for a saw that has a blade that locks in the closed position, but it would be easy to make a simple pouch sheath in which to carry the saw. Saws that appear to be identical are available from Coughlin and Coleman.

People who venture into remote places should carry a large knife, and I do too, but I also carry a small folding saw. **ASG**

NEW

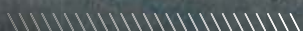
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Prehistoric MODERN

The simplicity of the Farson Blade is its strong suit. Fashioned from stainless steel, it is durable and easily cleaned.

THE FARSON BLADE SURVIVAL TOOL | Story and Photography by Andrew Philips

Imagine man standing before the dawn of civilization, a mere 20,000 years ago. He is a nomadic animal possessing keen senses and the basic needs of shelter, warmth, safety and food, and his tools are only as limited as his ability to create them. For thousands of years before metals were discovered, humans made tools from stone and animal bone, as they were both readily available and easily workable. They knew how to choose the best type of rock for each tool, and how to manufacture the tool so it had a sharp edge for cutting and scraping, or a sharp point for piercing. The large quartzite biface or the Clovis spear point are excellent examples of man's early ability to survive in a harsh environment. Tools were simple and easy to adapt; they made one tool that could do multiple tasks, and it was not adorned with frills or fancy scrollwork. It was made to get the job done efficiently and quickly.



Despite its skeletal appearance, the paracord-wrapped upper portion is surprisingly comfortable, providing a stark sense of security similar to brass knuckles.

Specifications

Length Overall: 6 inches

Height: 3.1 inches

Blade thickness: 0.140 inches

Cutting edge (curved): 7.75 inches

Blade material: 4CR15 stainless steel

Handle: 550 Black Paracord

Sheath: Nylon with plastic Insert

The essence of man's needs haven't changed since then. In a man-verses-nature scenario, all we want are the basic needs of shelter, warmth, safety and food. That concept is what makes this tool so unique and interesting, as Fremont Knives has developed the Farson Blade based on an ancient stone tool found near the vast prehistoric graveyards of Farson, Wyoming, which was once a jungle paradise.

The D-shaped stainless steel is impervious to rust and corrosion and easily cleanable. Since it has no attachments, accessories or extras, there's nothing to get damaged, lost or broken. It slices, chops and skins. It can be made into a weapon or an ax. It can act as a fine-bladed tinder maker, but is small enough to pack easily or wear nearly unnoticed on your belt.

The jimping on the fore and aft of the spine offers a sturdy platform on which to add additional power without the fear of slippage, while the eight feet of paracord softens the handle slightly and provides a lengthy lanyard. Without the paracord, the blade would be uncomfortable to use for any period of time. There are two holes in the face of the blade's handle, which not only afford a place to lock down the paracord, but when converting this to a makeshift ax/hatchet, allow tie-off points to strengthen the tool's conversion to an ax/hatchet.

Mimicking its original obsidian forefather, the Farson Blade, with its very narrow profile, would make a wonderful hide scraper if you didn't mind your hand and fist getting up close and personal when gutting a deer (unlike a handled knife). Around the campfire, this blade is a champion of chopping, especially considering that you can position it in such a way that the weight of your hand and arm is directly over what you are cutting.

This will not be your primary knife, for certain, but this knife was made to answer the question of what should your secondary blade be. It comes standard in a flimsy canvas pouch which the sharp edge of the Farson will saw through in no time, but Fremont Knives offers a leather upgrade for an additional \$20. **ASB**



A. Strapped to a stick, the Farson Blade becomes a formidable weapon or, more sedately, a great chopping tool. Only a few smart blows quickly hacked through a two-inch branch. **B.** The flat grind of the blade is strong and easily sharpened when needed. **C.** Good luck in rewrapping the eight feet of paracord in the exact configuration in which it was delivered. It took some figuring out. **D.** After only a few months of use, it is already slicing through the nylon. **E.** Two areas of jimping allow for a variety of holds on this knife, from forceful slicing to fine cutting and wood shaving. **F.** Luckily you can upgrade from the flimsy nylon pouch to a leather sheath for an additional \$20.

SOURCE → fremontknives.com | MSRP: \$49.00

STORIES OF SURVIVAL

The Lykov Family

Story by **Bryan Dumas**
Photography Courtesy Library of Congress



SIBERIAN LESSONS FROM A TRUE INDEPENDENT SPIRIT

In the early 1930s, a paranoid and power-mad Joseph Stalin began to purge the Soviet Union of all dissent. His initial targets were members of the Communist Party who began to question his treatment of the peasants, de-emphasized the push for industrialization and spoke out for greater internal democracy. Stalin's enemies were put on "show trials" whose only outcome was a death sentence. Thousands of political enemies were summarily killed.

But the cult of Stalin was not just about his place in power over the political apparatus of the Soviet Union. A personality cult was also being established.

RELIGIOUS PURGES

To do this, Stalin turned his purges toward the churches and common people of Russia. Religious icons were replaced with glorious images of Stalin. Those priests who refused were either executed or banished. Families sang praises to Stalin; mother's taught their children that Stalin was the wisest man alive. Families that did not abide by these teachings disappeared. By the mid-1930s some 10 million Russians had been forced from their homes and into Gulags deep in the Siberian taiga. By the end of Stalin's rule he had sent more than 20 million people to camps scattered throughout Russia, where more than half died.

And it is no wonder. The Siberian taiga is an inhospitable place.

Taiga is Russian for "forest" and is notorious for its weather swings; the temperatures drop below freezing for six months of the year encasing the land in an icy, snowy tomb with waist high snow drifts. Pine and spruce were the only greenery for miles. But when summer comes, and it comes but briefly, it brings with it piercing blue skies, warm air, rivers that run with wild abandon down narrow canyons, the smells of lilacs and pine, and for a brief time a sense of familiarity with nature. Just as quickly as it comes, winter slips in through an autumn so short you hardly notice its presence.

ESCAPE

For Russians sent to camps in this harsh land, nothing could have been closer to hell on Earth. Forced to labor through harsh winters logging or mining where your daily output dictated the next day's meager rations of



bread and water, wearing the most threadbare of clothing, and sleeping in ramshackle huts on planks of wood.

But for a few Russians, going into the taiga was a matter of choice. For them, it meant survival. The survival of their way of life. The survival of their family. This was the case for the Lykov family.

The Lykov's belonged to a group known in Russia as the Old Believers — members of a sect of the Russian Orthodox Church who held onto their beliefs until the bitter end. The story of the Old Believers goes back to the time of Peter the Great and the Great Schism of 1667. According to Vesily Peskov, from his book *Lost In The Taiga*, "The Old Believers looked on the ascension of Tsar Peter the Great, with his especially harsh innovations, as the coming of the Antichrist they had already predicted." Many of the Old Believers moved further and further into the Siberian wilderness to distance themselves from this perceived Antichrist. These Old Believers were driven into tiny sects that were set apart from society. They shunned all things worldly, including, according to Peskov, "state laws, military service, passports, money, authority of any kind, games, singing, anything that people 'not fearing God, could think up.'"

DISCOVERED

By the time Stalin's purges crept into the far distant Siberian wilderness, the Lykovs were already a self-sufficient family living well removed from the world. In 1935, after a communist patrol shot Karp's brother while he knelt beside him working the family's potato crop, Karp Lykov, his wife Akulina and their two children — Savin, 9 years old, and Natalia, 2 years old — removed themselves completely from the world. Two more Lykovs would be born in the wild — Dmitry in 1940 and Agafia in 1943 — and these two wouldn't know another human that wasn't a member of their family until they were discovered by a Russian geology team in 1978.



[CLOCKWISE FROM TOP LEFT] Karp Lykov and his daughter Agafia. • The Lykov's main residence. • Dmitry and Agafia with their walking stick and hemp clothing. • This photo was taken of Agafia in 1988.

[OPPOSITE] The Abakan River runs through Altai Mountains in the southern portion of Siberia.

[BELOW] Karp and Agafia wearing clothing from fabric given to them by the geologists.



The Lykovs followed the Abakan River into the Altai Mountains of southern Siberia. Their first settlement was discovered shortly after World War II concluded by a group of military topographers. When they returned to the area a year later, the family had moved on. According to Peskov, the Lykovs were seen again in 1958 by "a group of tourists going down the Abakan" when they "suddenly came upon a bearded man standing with a fishing rod." The guide told the tourists that there were somewhere near the Lykov "hermitage". However, instead of settling on the river like they had in 1945, the Lykovs had settled up the mountain and their cabins were not seen. Each time they moved, they brought with them the seeds, some clothing, a few pots and pans, a spinning wheel and a loom they initially brought into the wild with them.

SURVIVAL SECRETS

But how could a family survive forty-two years on their own in one of the harshest stretches of land on earth? Their isolation forced them to learn to depend on each other and on whatever the taiga provided.



[TOP] The Lykovs in their first encounter with the Soviet geology team.

[BOTTOM] Agafia, in the middle, sits outside her cabin, perhaps speaking with Russian geologists in the late 1980s.

They lived in what, on first glance, appeared to be a ramshackle hut, covered by years of soot, hurriedly thrown together. But the home was carefully thought out, including the roof where “the larch boards were shaped like troughs and laid out like the tile on European homes.” Inside, the family had constructed a fieldstone stove with a chimney that went out the sidewall not the roof. In one corner of the tiny house, the treasured loom and spinning wheel stood, and it amazed the first people to find the Lykovs that six grown adults could sleep in such tight confines.

Though the taiga provided more than enough materials to shelter the family from the harsh, long winters, ultimately, it was due

to those long winters that the Lykovs lived in what Agafia called the “hungry years” because the large garden they’d rooted out of the taiga on the cold north slope of the mountain did not feed them well. Their diet consisted of potatoes, onions, turnips, peas, hemp and rye all grown from seeds they’d brought into the wilderness. At one time, the family had carrots but those seeds had been lost to mice years earlier. The staple of their diet was potato that they made into simple, unleavened bread that resembled a flat, black pancake.

THE WILD PROVIDES

What their gardens couldn’t provide, the taiga had. The birch trees that had supplied everything from pots when their iron ones rusted, to shoes, skis, and chests for storing potatoes, also gave them birch juice, which the Lykovs collected in April and stored in their natural refrigerator: The river, in, of course, birch bark containers. Summer in the taiga meant mushrooms, raspberries, huckleberries, currants, and nuts; in late August every member of the Lykov family would go nutting. They were all skilled in climbing pines to help gather “the potatoes of the taiga.”

The greatest hardship faced by the Lykovs was living without salt. Karp lamented to Peskov that life without salt was “true torture.” Though meat was a part of their diet keeping and curing meats for long periods of time became excruciatingly difficult without salt. Primarily, the family fished the Abakan, but they did set out traps for the musk deer that frequented the hills around their home. Most of the time they ate the fish raw, but dried it for near future needs, while the deer meats would be stored for religious days or when they were doing difficult jobs or long journeys.

Despite all this, the family still lived on the edge of starvation. Agafia recalls the family was “hungry all the time. Every year we held a council to decide whether to eat everything up or leave some for seed.” In 1961, a late June snow killed everything in their garden. The following winter the family quickly consumed everything in their stores. In spring they were reduced to eating their leather shoes, bark, and birch buds. Akulina had starved herself to death in order for her children to survive. The following summer, miraculously a single rye plant sprouted and the family took turns guarding it day and

night from the mice, squirrels, and birds that were a constant threat to their seed stores. From that single rye sprout, the family worked to restock their stores. Their harsh diet probably accounted for the deaths of Agafia's three siblings who died in 1981—Savin and Natalia, most likely from kidney disease, and Dmitry from pneumonia.

Time passed slowly for the Lykovs and each member of the family had specific roles they fulfilled. Sometime in the 1950s, Savin and Dmitry were separated from the family and moved into a cabin near the river almost six kilometers from the "main residence." Peskov speculates for this separation: "First of all, it was crowded for six in one cabin; secondly, it was not such a bad idea to have an outpost by the river as well as a fishing base; thirdly, relations with Savin (who was religiously dogmatic and a harsh man) were becoming increasingly difficult; and finally, the most important possibility: they had to avert the danger of incest."

Down by the river, Savin honed his leather making skills as Dmitry learned to chase animals down for the hunt. Without so much as a bow and arrow, Dmitry once chased a deer two days, barefoot, through the snow to feed the family. Savin served as the family's priest of time; keeping track of time was of utmost importance to the family so that they could maintain holidays, prayers, fasts, and the times when they were forbidden to eat meat.

Natalia served as the family's "God-mother" and she cooked, sewed and healed. Agafia (who still lived at the family homestead) taught herself to cook, wield an ax, fish and she even crafted furniture for the family.

The family would pay visits to one another at the two cabins. This brought a sense of diversity to their days. Another way they broke up the monotony of the long winters was to recount dreams around the fire as food for Holy Days was cooked or around the loom as the daughters sewed hemp clothing.

And they had plenty of time to talk. Making clothing was a herculean task for the family that consumed most their labor and effort. It all revolved around hemp. So important was hemp in their lives that Peskov repeatedly heard Karp mention it with reverence and gratefully in his prayers to God. The Lykovs used hemp for all their clothing needs, but it was also used as thread for their birch bark and later leather shoes (dipped in birch bark pitch tar for water-



proofing), fishing lines and rope. The hemp growing around the house, and hung to dry inside, also served to keep away the fleas.

FROM THE WILDERNESS

Over time, the Siberian isolation wore down on the family, and finally, Peskov notes, "in 1978, the family was already so worn down by their struggle for existence that they had no desire to bury themselves away from people anymore, and they meekly accepted what fate had prepared for them."

Karp Lykov died in 1988, exactly 27 years to the day after his wife Akulina. With the help of a geology team, Agafia buried her father beside the graves of the rest of her family. Though she'd gone into the cities a few times, Agafia Lykova, the sole survivor of her family, still lives on the remote mountainside in the Abakan Range, 150 miles from the nearest town. She refuses to leave her family's homestead and continues to live a life of religious piety, simplicity and self-reliance on the land and her abilities.

For over seventy years Agafia Lykov, a child of the Siberian wilderness, with the taiga as her teacher, has scratched out a life that most would turn and run from.

"My greetings to everyone. Tell them we have been making ready for the winter," Agafia wrote in 1986 in a letter to her relatives living in the cities.

May we all get ourselves ready for a long winter and many more. **ASG**



[TOP] Another view of the Lykov homestead.

[BOTTOM] The Lykov family graves. The first to die was their mother, Akulina in 1961, followed by Savin, Dmitry, and Natalia in 1981, and Karp in 1988.

Rain Shield

HAZARD4'S PONCHO VILLA

Story and Photography by **Alan Stewart**

Due mostly to its rounded shape and northern position on the island chain, Mount Wai'ale'ale on Hawaii's Kauai Island — although only 4,148 feet in elevation — averages more than 452 inches of rain each year. It is one of the wettest environments on Earth, and if you don't have quality wet-weather gear while hiking the Kaoie Gorge or the USGS route to the rain gauge, it is guaranteed you and everything you own will be soaked by the time you reach the top.

The military issued millions of ponchos to its troops in wet-weather climates, like the south Pacific, during World War II and the jungles of Vietnam, and young men a generation or two ago learned of their abilities. They were functional gear that served a variety of purposes beyond keeping out the rain (blanket, tarp, pillow, seat). However, for whatever reason, ponchos have never been in vogue outside of the armed services. With the cheaply made vinyl ponchos on the market perhaps it is akin to wearing a plastic bag? But since when is survival about fashion? If the choice is staying alive or look good dying, it doesn't matter what's on the Paris runways.

Hazard4 changed that with the introduction of the Poncho Villa. Despite the pithy reference to the American ally-turned-insurgent, Pancho Villa, the Poncho Villa is as close to a best friend as you'll get when the rain starts to pour down.

Ponchos in general have a few unique advantages over traditional raincoats and jackets, and the biggest one is that a poncho covers over packs and gear you might be carrying, thereby keeping everything dry instead of just you. They are loose fitting and allow the wearer to tuck his arms inside for extra warmth or to access gear. Ponchos are usually made from a singular piece of material so there are few seams to rip or leak. The Poncho Villa is about 55 inches wide and (unbuttoned and laid flat) 60 inches long.



A three-quarter-length poncho, the Poncho Villa will cover most of the body as well as anything the person might be carrying.

The poncho is stored in its own front pouch which doubles as a large pocket when worn. A downside to this is that you'll never get it back into the storage pouch/pocket exactly as you took it out, so it will take up more space in your pack than you originally thought it would after the first use. However, it is only 2.5 pounds and comes in either black or coyote tan.

The sides of the poncho button together easily to tighten up the poncho, or they can be left loose for better access to your gear (as well as making the poncho larger to cover more if you have a large pack). There are tie-downs on either side of the brimmed hood as well as on the back. Cinch these down and the hood will turn with your head, or leave them slightly loose so your head will turn inside the hood. The front flap has a zipper as well as a hook-and-loop closure that is stiff and sits high enough to keep rain from coming through the front.

The front pocket also has a zipper and a hook and loop flap. Inside, a D-ring is secured to the pocket to attach keys or other valuables. On all four corners are grommets that can be used to tie up the poncho as part of a shelter, and there are small recesses on either side of the grommets that can accept tent poles. Though this tactical poncho has grommets to be used as a makeshift shelter, it begs the question: If you are already wearing it in the rain, should you take it off to make it into a shelter, thereby getting soaked in the process?

The material is a water-resistant and breathable soft-shell fabric, while all the seams are sealed with waterproof tape. It easily slips on and off over even the bulkiest of clothing and packs, while shedding rain quickly. The disadvantage of the Poncho Villa, and ponchos in general over traditional rain jackets, is that the loose material could possibly get caught on branches and flap in the wind.

But if keeping dry is your main objective — and it should be in the top five in any survival situation — the Poncho Villa is revolutionary... just like Pancho Villa. **ASG**

SOURCE

→ hazard4.com | MSRP: \$129.99



Three lockable pull-ties on the hood — two on the sides and one in the back — allow the wearer to cinch down the hood snugly to the head or leave it loose.



The zipper and hook and loop closure secure the front of the poncho directly up to the chin to protect the neck and upper chest from rain.



The front pocket/storage pouch is protected by a zipper and two hook and loop closures on either end. Inside a D-ring can be used to secure valuables.



The sides are fastened together via snap buttons which can be left unbuttoned to allow the poncho more freedom for movement as well as to be spread out like a blanket or tarp.



The grommets on the corners can be used to tie up the poncho when converting it to a shelter, and the small pockets on either side of the grommets can accept tent poles as well.



The pull-tie on the back of the head.



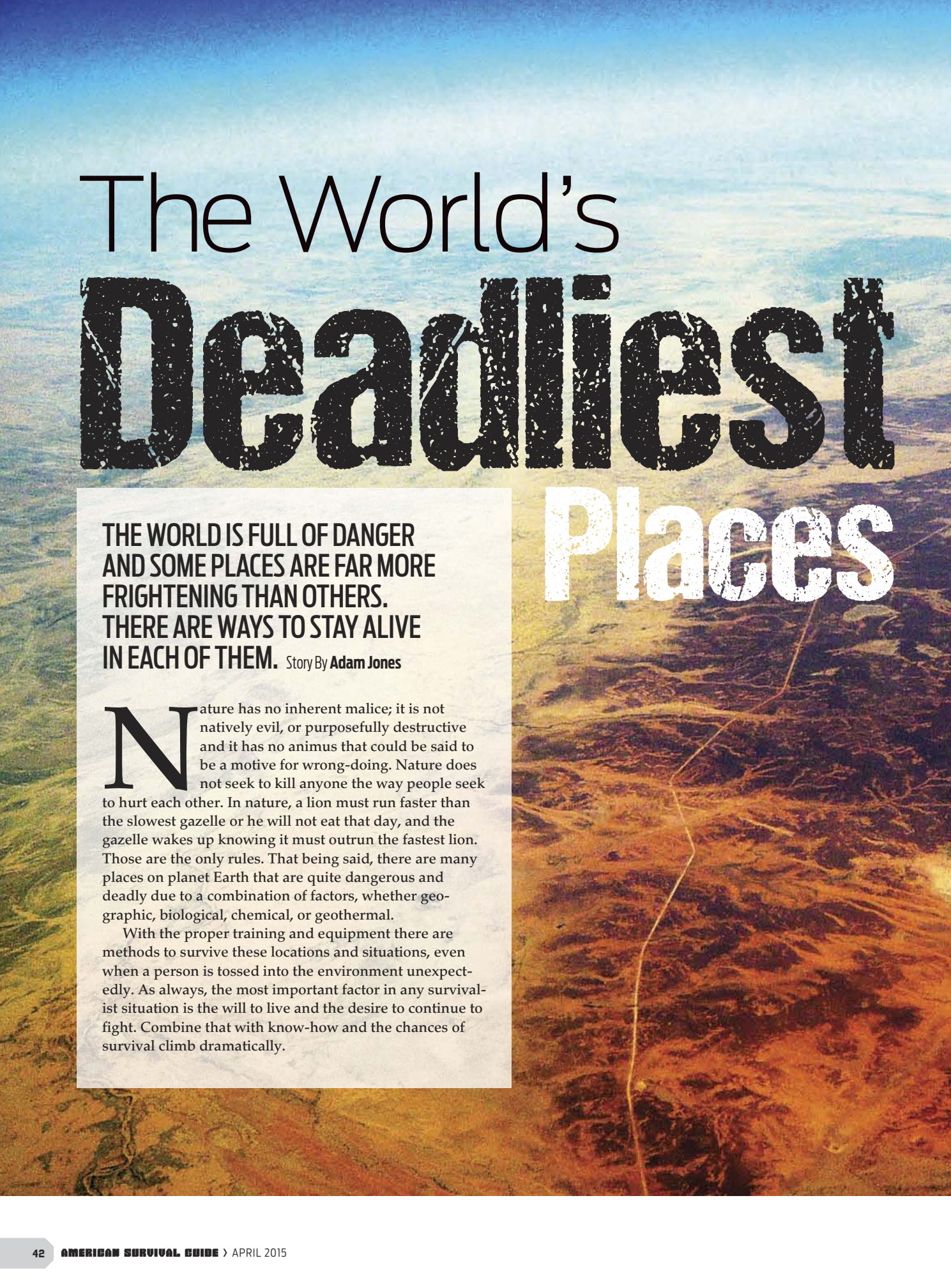
There are plenty of squares of loop pile on which to attach patches (one on the front, back, top of the hood, and either shoulder)



Inside the hood is a soft and somewhat padded liner to help keep the head warm.



Water beads up immediately on contact and slides away quickly.



The World's Deadliest Places

THE WORLD IS FULL OF DANGER AND SOME PLACES ARE FAR MORE FRIGHTENING THAN OTHERS. THERE ARE WAYS TO STAY ALIVE IN EACH OF THEM. Story By **Adam Jones**

Nature has no inherent malice; it is not natively evil, or purposefully destructive and it has no animus that could be said to be a motive for wrong-doing. Nature does not seek to kill anyone the way people seek to hurt each other. In nature, a lion must run faster than the slowest gazelle or he will not eat that day, and the gazelle wakes up knowing it must outrun the fastest lion. Those are the only rules. That being said, there are many places on planet Earth that are quite dangerous and deadly due to a combination of factors, whether geographic, biological, chemical, or geothermal.

With the proper training and equipment there are methods to survive these locations and situations, even when a person is tossed into the environment unexpectedly. As always, the most important factor in any survivalist situation is the will to live and the desire to continue to fight. Combine that with know-how and the chances of survival climb dramatically.



From the air, the Australian Outback is as desolate as one can imagine, which is why 90 percent of the continent's inhabitants choose to live near the shores.



[ABOVE] Covering a range of 500,000 miles, the Gobi Desert isn't one of sand, it is one of rock. [ABOVE, RIGHT] The Gobi Desert is one of the largest and least hospitable places on Earth. Due to a peculiarity of the winds blowing off the Siberian Steppes, temperatures are absurdly variable, ranging from -40 F in winter to 122 F in summer. [RIGHT] The desert receives only 7.6 inches of rain a year. However, there is water in the Gobi desert if you know where to look.



GOBI DESERT, NORTHERN CHINA

Few places on the globe can be said to be as extreme as a desert in northern China which also covers southern Mongolia – the Gobi desert. Asia's largest desert, covering a range of 500,000 miles, isn't one of sand, it is one of rock. It is between 3,000 to 5,000 feet above sea level which generally makes it a cold desert. However, due to a peculiarity of the winds blowing off the Siberian Steppes, temperatures are absurdly variable, ranging from -40 F in winter to 122 F in summer. The temperature can vary by as much as 63 degrees in a single day. As a result, temperature extremes are the most significant survival challenge.

To survive the cold, a few simple principles apply: keep your clothing clean and dry, keep your head covered as that is where humans lose most of their heat, avoid overheating or sweating profusely and wear your clothing in layers. Because wind chill can rapidly cool body temperature, construct a shelter obscuring the wind (death from hypothermia comes at a 77 degree core temperature). Never put your sleeping bag directly on the ground in cases of extreme

cold – create a barrier of leaves or reeds to further insulate from the cold. When the temperature is extremely high, the most significant risks are heat stroke, heat cramps and heat exhaustion. Staying hydrated and maintaining salt in your system will combat these problems. Remaining lightly clothed is important as evaporation increases the body's water loss. Finding a spot to shelter away from the sun is critical, and keeping sunscreen on any exposed skin will minimize skin damage.

Whether in the deep cold or the scorching heat, one problem will become immediately evident – there is very little water in the Gobi desert. The desert receives only 7.6 inches of rain a year. However, there is water in the Gobi desert if you know where to look. Because the Gobi is close to some of the oldest ancient civilizations in the world people have been digging out water sources for thousands of years. This means there are literally thousands of wells that were dug. There are also 36 active springs in the desert – a small amount of research would allow a visitor to know these locations and greatly increase the likelihood of survival.

**"SURVIVAL IS NOT
ABOUT BEING
FEARLESS. IT'S
ABOUT MAKING A
DECISION, GETTING
ON AND DOING IT,
BECAUSE I WANT TO
SEE MY KIDS AGAIN,
OR WHATEVER THE
REASON MIGHT BE."**

—BEAR GRYLLS



[ABOVE] Long, endless roads cut through the harsh environment, where seeing not a soul for days is considered normal. [ABOVE, RIGHT] Everything in Australia seems ready to kill you. It is home to some of the most deadly animals anywhere in the world, like this inland taipan, which has the most toxic venom of any snake. [RIGHT] The Flying Fox can have a wingspan of five feet and human contact can result in a bite or scratch, which can transfer the Hendra virus the bat carries.

THE AUSTRALIAN OUTBACK, AUSTRALIA

One of the most unusual, and most deadly, continents on Earth that happens to also be the most interesting, is the land down under. Australia is home to some of the most diverse wildlife in the world, with many unique species that have adapted to the harsh environments of the continent. It is also home to some of the most deadly animals anywhere in the world. The most habitable regions of Australia are the areas adjoining the coast, which can be temperate and lush. There are a multitude of cities and beach towns that are modern and safe, but at the center of the country is a less hospitable zone – the Australian Outback.

The Outback is vast, with very small amounts of rainfall and soil that is generally not very fertile. As a result, the population of the region is extremely sparse, with 90 percent of the population living in the coastal areas. Compounding the danger of the region is the poisonous wildlife. The deadliest snake in the world is found in Australia – the inland taipan. It has the most toxic venom of any snake by far, with one bite con-

taining enough venom to kill up to 100 men. Depending on the bite, the venom can kill in 30 to 45 minutes if untreated.

To treat a snakebite, the most common method is the pressure immobilization technique. The primary idea is that the venom is isolated at the bite site while the victim is transported to a healthcare facility. The only treatment after the bite is an immediate administration of 3-4 vials of CSL Taipan Snake anti-venom intravenously to prevent paralysis and muscle damage. Even more peaceful Australian species can be quite dangerous, such as the Australian Flying Fox. The Flying Fox is a type of bat with a wingspan of up to five feet. It primarily eats blossoms, fruit and nectar. Even though the bat is non-meat eating, human contact can result in a bite or scratch, which can then transfer the Hendra virus the bat carries. While the infection rate for Hendra tends to be low, it is very lethal and kills 57 percent of the time. In the case of a bite, carefully clean the wound and watch for signs of infection which would include respiratory problems – immediately seek medical attention should any appear.

The barren, sea-swept Clipperton Island in the Pacific, about 800 miles east of Acapulco, Mexico. It consists of a little more than five islets and, surprisingly, a lagoon with drinkable water.



The White Tern is popular on Clipperton Island and its eggs are available certain times of the year.



Once almost eaten into extinction by pigs brought from the mainland, the *Gecarcinus planatus* crab has made a tremendous comeback, but has turned the island, once covered in grass, into a sandy/rocky wasteland.

CLIPPERTON ISLAND, PACIFIC OCEAN

There's a tiny patch of sand and flora lost in the Pacific Ocean where not a single soul lives. It is completely isolated and is nearly 600 miles from any other patch of dry land. Known as Clipperton Island, it has a macabre history. There was an attempt by around 100 people to colonize it in 1915, but with the start of the Mexican Revolution, resupply ships stopped arriving. By 1917, all but one of the men on the island had died from a combination of scurvy or in an effort to fetch help (the last perished after declaring himself king and attempting to rape the remaining women on the island, who killed him for it). A passing Navy warship rescued the final four women and seven children later that year.

A lonely, unoccupied lighthouse remains on the island. There are several survival challenges associated with living, however briefly, on Clipperton Island. It has already claimed nearly one hundred lives. Fortunately, there are some examples of castaways using the island after an incident at sea to survive until they could be rescued.

In 1962, a tuna boat went down, and nine sailors were able to escape to the island and

called it home for 23 days. The island has a stagnant fresh water lagoon which is drinkable. Modern filtering techniques could promote the quality of the water. A simple sock can act as an effective filter. Placing layers of sand, charcoal, leaves, and reeds can successfully remove small particulate matter and larger organisms that can be harmful.

The only land animals known to exist are bright-orange crabs, birds, lizards and rats, the last of which seem to have arrived from recently wrecked ships. The birds that lived on the island produced eggs that could not be eaten and they have little meat. The remaining buildings were uninhabitable, but they were able to turn the old huts into firewood and built shelter from some sheet metal and concrete they found. They were able to fish off the fringing reef, and they'd salvaged a small amount of onions and potatoes from their vessel, which was quite lucky as there were not enough coconuts on the island to sustain them. They were rescued when they were able to get the attention of a fishing vessel and were later picked up by a Navy destroyer. These techniques are effective in other desert island situations as well.

KIDNAPPINGS IN AFRICA, CENTRAL AND SOUTH AMERICA, AND THE MIDDLE EAST

A dangerous aspect of visiting certain locations in Africa, Central and South America, or the Middle East, whether for business, tourism, or charity work, is that of kidnapping. If a person is visiting these areas professionally, oftentimes a briefing will occur with a security professional who will provide guidance to a potential visitor on ways to stay safe and potential scenarios that might occur should the worst happen. There are companies, such as Risks Incorporated in Miami, that will supply this training for around \$650.

Generally speaking, there are two major types of kidnappers in a given region. The first type was, for a long time, the most common – a kidnapper that simply has the intention of ransoming a victim for money. This type occurs more frequently in areas such as South Africa, Mexico (which recently reported a 300 percent increase in the crime) and Columbia.

To prepare for this situation, travelers to these dangerous regions will have the option of acquiring “kidnapping and ransom insurance” – or K&R in the industry lingo – which is underwritten by most major insurance providers such as AIG or Global Underwriters. This type of insurance is not cheap, and it can run as much as \$3,000 per day, depending on where you are going and what you

“ONCE IRAQ BECAME A HOT BED FOR KIDNAPPING, REPORTERS HAD TO USE EVERY KIND OF TRICK THEY COULD MANAGE TO AVOID IT. THIS INCLUDED CHASE CARS, SECURITY MEN FOR MORE PROSPEROUS AGENCIES AND NETWORKS, AND GPS SIGNALS ON SATELLITE PHONES THAT COULD PINPOINT THE JOURNALIST’S LOCATIONS.” —JANINE DI GIOVANNI



On April 15, 2014, 273 girls from Chibok Government Secondary School in Nigeria were kidnapped by Boko Haram terrorists. The extremist Muslim group believes educating women is a sin and instead auctioned off the girls to be wives for fellow militants.

will be doing there. Some businesses will cover these costs for the employee and some may not, allowing the employee to opt for the coverage or not. In general, security specialists will tell a potential traveler that in the case of a kidnapping for ransom an escape attempt may not be worth it in terms of the danger incurred. This type of kidnapper just wants as much money as they can get, and will generally free the person once the money is paid.

However, there is a second type of kidnapper that has more recently emerged and is the much more dangerous of the two. This type of kidnapper is a religious extremist and most often there is a single ending for the victim — death. Public beheadings have become a growing phenomenon as the kidnapper attempts to make a political statement. If a person is caught by this type of kidnapper, security professionals will generally give a different type of advice: Do whatever you can do within your power to escape, no matter how dangerous, because they are almost certainly going to eventually kill you. Fight to stay alive, fight to reach someone who can help, and odds of survival increase significantly. **ASB**

SURVIVING DEADLY LOCATIONS: SUPPLEMENTAL DOCUMENTARIES

Survival! The Shackleton Story (2014) – This documentary describes the experiences of a ship's crew that survived a year in Antarctica after their ship was destroyed by packed ice.

Braving Alaska (1993) – This is a National Geographic documentary following several families that make

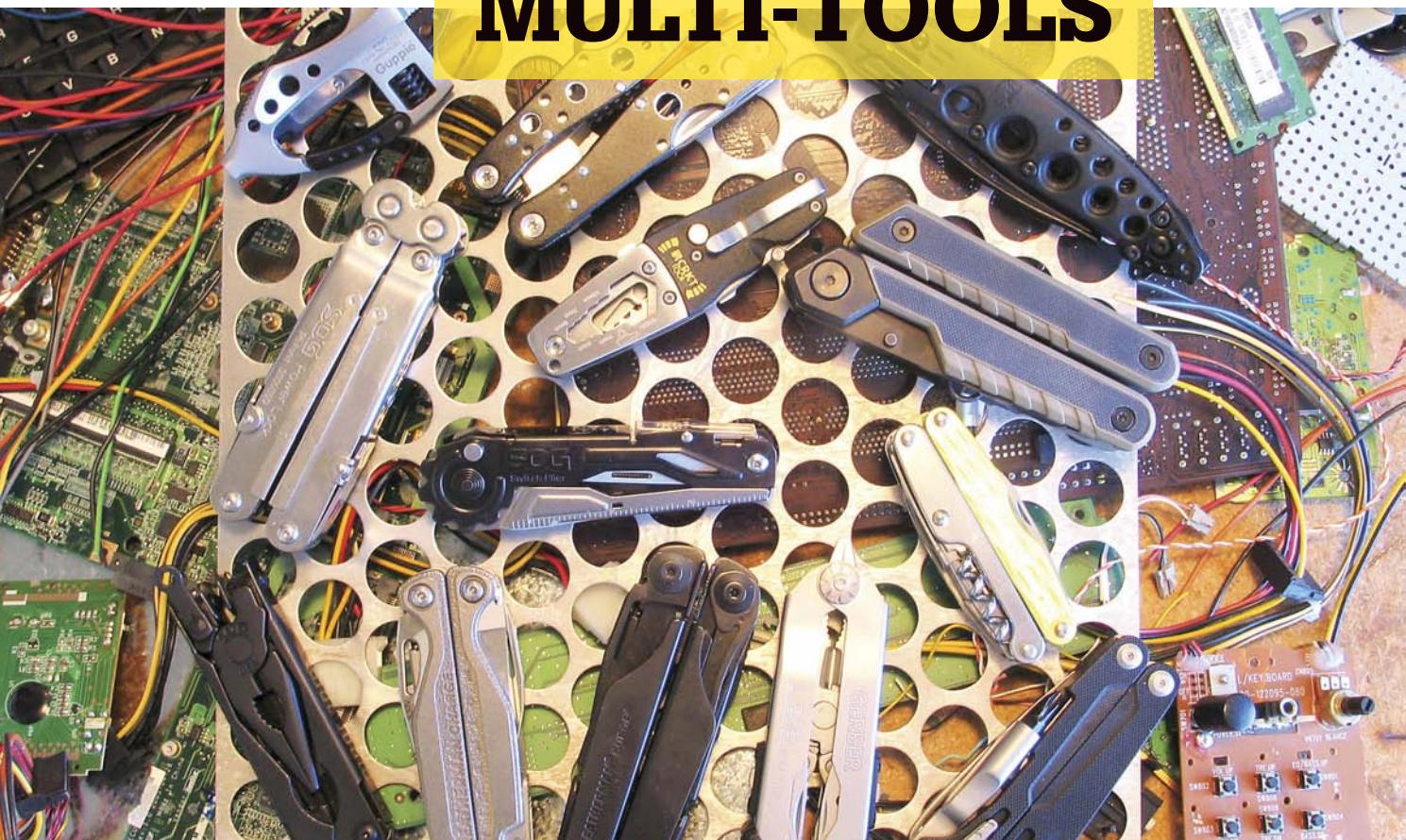
their living in the more extreme parts of Alaska.

The Extraordinary Tale of William Buckley (2010) – This a dramatization of a 23 year old Australian convict that escaped from prison and then lived 32 years in the Australian wilderness, one of the harshest environments in the world.

Alone in the Wild (2009) – This British documentary series follows the exploits of an extreme photographer that captured his experiences surviving for three months alone in the wild. He was dropped off in the Dog Pack Lake region of the Yukon Territory of Canada and traveled the area looking for food and resources.

Gear Guide

MULTI-TOOLS



Handy Multi-Purpose Must-Have Gear

Story and Photography by **Simon Meyers**

THE UBIQUITOUS multi-tool comes in hundreds of configurations and has quickly replaced the Swiss Army-style pocket knife in utility and function. The modern multi-tool was first developed by Tim Leatherman in 1984 and dozens of companies around the world soon followed suit. Tools can be found with up to 30 or more different functions, and some have branched off to become specialized, specifically for a certain type of weapon or for bicycles. Most survival kits sold these days include a multi-tool, which goes to show if you don't have one handy in an emergency or for everyday carry, you're missing out on this very versatile piece of gear.

Because it can fix anything no matter where you are, a multi-tool's ability to do its job relies on your willingness to carry it. If your multi-tool is too big to carry comfortably then it is impractical; if it is too small to include the functions you normally need, it is unreliable. Somewhere in the middle — and the middle is different for everyone — is the perfect tool. Identify your needs: Do you often need to fix a rifle in the field? Are you a bike messenger? Are you looking for something to stave off the marauding hordes in a SHTF situation? Don't worry, there's a multi-tool seemingly made specifically for you. **ASG**

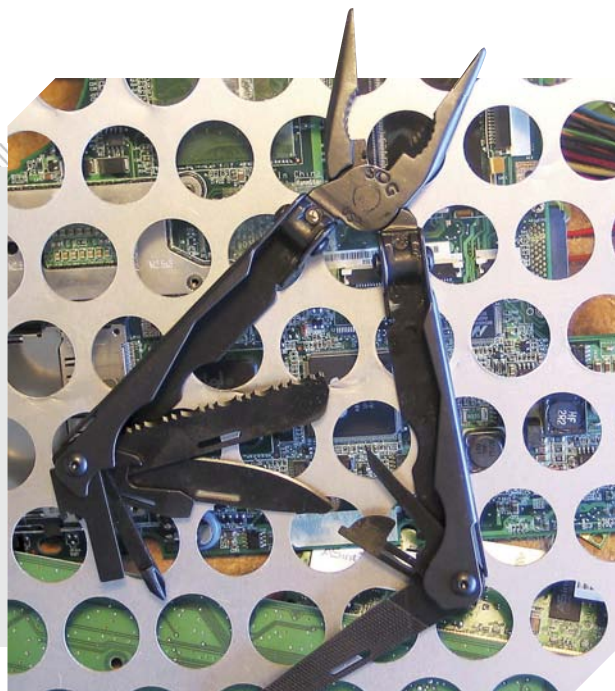


SwitchPlier 2.0

With the flick of a button out springs the pliers and handle. Made from 420 steel, the silver and black tool contains 12 functions.

- Three-sided file
- Bolt grip channel
- Can opener
- Medium flat screwdriver
- Needle nose pliers
- Ruler
- Awl
- Bottle opener
- Hard wire cutter
- Mutli-angle needle nose pliers
- Phillips screwdriver
- Small flat screwdriver

Source: sogknives.com | MSRP: \$64



PowerAssist EOD

Finished in black oxide, the PowerAssist EOD weighs 9.6 ounces and is 7 inches long when open. It comes with a tough nylon sheath.

- Three-sided file
- Can opener
- Bolt grip channel
- Fuzewell spike
- Large flat screwdriver
- Phillips screwdriver
- Small flat screwdriver
- Wire crimper
- Blasting cap crimper
- Bottle opener
- Full serrated blade
- Hard wire cutter
- Needle nose pliers
- Ruler
- Straight edge blade

Source: sogknives.com | MSRP: \$126.50



Powerlock S60

With a total of 18 tools, the Powerlock has stainless steel covers protecting the tools while being stored. The tool weighs 9.6 ounces and is 7 inches long.

- Half-serrated blade
- Three-sided file
- Blasting cap crimper
- Bottle opener
- Hard wire cutter
- Medium flat screwdriver
- Phillips screwdriver
- Scissors
- Wire crimper
- 1/4 Drive
- Awl
- Bolt grip channel
- Can opener
- Large flat screwdriver
- Needle nose pliers
- Ruler
- Small flat screwdriver
- Wood saw

Source: sogknives.com | MSRP: \$114



Voodoo Tactical Multi-Tool

Voodoo's easy-to-grip and inexpensive multi-tool has 420 stainless steel tools that mount inside the stylish anodized aluminum handles. It measures only four inches when closed.

- Knife blade
- Phillips screwdriver
- Serrated blade
- Bottle opener
- Two-sided file
- Flat screwdriver
- Can opener
- Chisel
- Wood saw

Source: voodootactical.net | MSRP: \$10.95

"TOOLS CAN BE FOUND WITH UP TO 30 OR MORE DIFFERENT FUNCTIONS, AND SOME HAVE BRANCHED OFF TO BECOME SPECIALIZED, SPECIFICALLY FOR A CERTAIN TYPE OF WEAPON OR FOR BICYCLES."



Guppie

This pint-sized tool comes with a host of features making it a great addition to your pack or even as a keychain (also has a pocket clip). Only 3.5 inches long when closed, it weighs 4.1 ounces.

- LED flashlight
- Carabiner
- Flat screwdriver (2)
- Phillips screwdriver (2)
- Knife blade
- Adjusting wrench

Source: crkt.co | MSRP: \$39.99

Zilla-Tool

At 6.5 inches and 7.4 ounces, it is a large tool, but the included sheath makes it easy to carry. Made from black glass-filled nylon it is sparse on tools but high on quality.

- Pliers
- Wire cutter
- Flat screwdriver
- Phillips screwdriver
- Knife blade

Source: crkt.com | MSRP: \$49.99



AR15 Tool

Keep your AR-15 in proper working order. Mount optics, lights, rails, etc., or override a jammed bolt. Disassemble and reassemble with this tool that comes with a MOLLE-compatible sheath.

- Combination needle-nose pliers
- Carbide cutter
- G10 grip plates
- Carbide glass-breaker
- Carrier scraper

- 10 function bolt/firing pin/cam pin scraper
- Cotter pin puller
- Bolt override tool
- A1 & A2 front site adjuster
- Interchangeable pin punch
- Interchangeable hooked pick
- 8-32 male and female thread receivers
- 3.25-inch 440c serrated Tanto knife
- 12 high quality bits with bit driver
- Tap hammer
- Metal file

Source: realavid.com | MSRP: \$79.99

“IF YOUR MULTI-TOOL IS TOO BIG TO CARRY COMFORTABLY THEN IT IS IMPRACTICAL; IF IT IS TOO SMALL TO INCLUDE THE FUNCTIONS YOU NORMALLY NEED, IT IS UNRELIABLE.”



Juice XE6

It comes in two colors (granite and moss — shown) with an optional sheath and engraving. The XE6 is 6.9 ounces, only 3.25 inches long (closed) and has 18 tools.

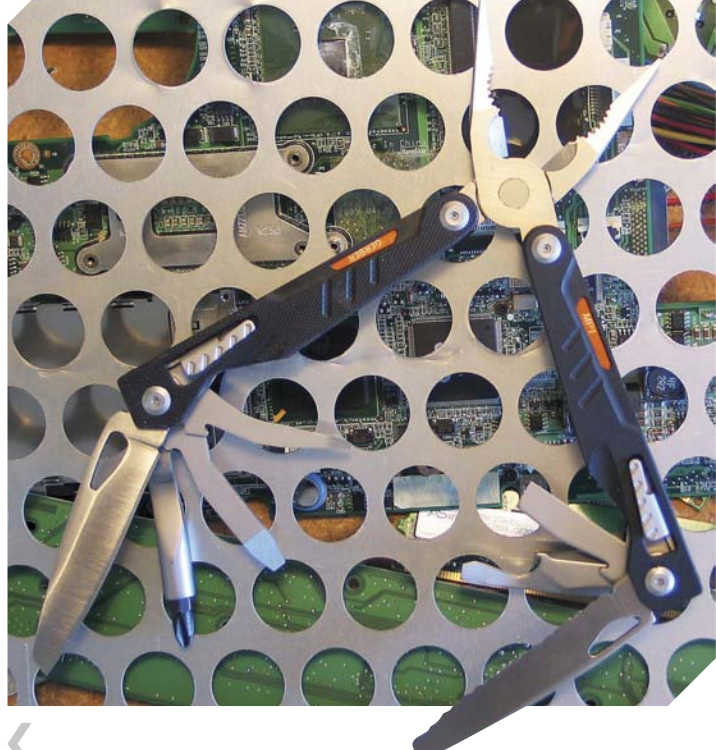
- Needle nose pliers
- Regular pliers
- Hard-wire cutters
- Wire cutters
- Knife
- Serrated knife
- Saw

- Spring-action scissors
- Awl
- Can opener
- Bottle opener
- Corkscrew
- Wood/metal file
- Diamond-coated file
- Phillips screwdriver
- Medium/large screwdriver
- Small screwdriver
- Extra-small screwdriver

Source: leatherman.com | MSRP: \$99.85



Source: leatherman.com | **MSRP:** \$109.85



Surge

One of Leatherman's largest tools, it features the largest tools in the line. It weighs 12.5 ounces but is only 4.5 inches (closed) and is available in either stainless steel or black (shown).

- Knife
- Serrated knife
- Saw
- Spring-action scissors
- Awl w/ thread loop
- Ruler
- Can opener
- Bottle opener
- Wood/metal file
- Diamond-coated file
- Blade exchanger
- Large bit driver
- Large screwdriver
- Small screwdriver
- Needle nose pliers
- Regular pliers
- Wire cutters
- Hard-wire cutters
- Stranded-wire cutters
- Electrical crimper
- Wire stripper

Charge TTI

This multi-tool is a combination of all of Leatherman's most requested features into one. It features titanium handles and a leather sheath, as well as a multitude of drivers in a separate pack. It weighs 8.2 ounces and is 4 inches long (closed).

- Needle nose pliers
- Regular pliers
- Wire cutters
- Crimper
- Wire stripper
- Knife
- Serrated knife
- Saw
- Spring-action scissors
- Cutting hook
- Ruler
- Can opener
- Bottle opener
- Wood/metal file
- Diamond-coated file
- Large bit driver
- Small bit driver
- Medium screwdriver

Source: leatherman.com | **MSRP:** \$169.85



MP1 (42-46)

The tool's molded composite G-10 grip is slip-proof and it comes with a molded sheath. The tool is 8 ounces and 4.38 inches long (closed). The pliers are 6450 carbon steel and the knives are 420 stainless steel.

- Pliers
- Bottle opener
- Full serrated blade
- Pry bar
- Large flat screwdriver
- Smooth knife
- Wire strippers/cutter
- Phillips screwdriver
- Flat screwdriver

Source: gerbergear.com | **MSRP:** \$131.99

CRKT Tool

Creatively designed to allow a variety of tools in a small space, the CRKT tool is 4 inches long (closed) and 5.1 ounces. The skins are glass-filled nylon, while the main blade is 5CR15MoV steel. It comes with a molded nylon sheath.

- Utility blade
- Sawtooth blade
- Multi-fit box wrench
- Wire stripper
- Phillips screwdriver
- Flat screwdriver
- Bottle opener

Source: crkt.com | **MSRP:** \$54.99

**Diesel**

With innovative slide locks, the pliers can be accessed with one hand. Made from stainless steel, it weighs 8.6 ounces and is nearly 5 inches long when closed. It comes with a nylon sheath.

- Needle nose pliers
- Wire cutter
- Serrated knife blade
- Phillips screwdriver
- Small flat blade screwdriver
- Medium flat blade screwdriver
- Large flat blade screwdriver
- Can opener
- Bottle opener
- File
- Saw
- Scissors

Source: gerbergear.com | **MSRP:** \$83.99

ASG

The Wiki Up Shelter

CARVING OUT A HOME IN THE WILDERNESS

Story and Photography by **Clint Jivoin**

Imagine yourself in the middle of a vast wilderness. The only sign of human life is the unmaintained trail you've been hiking along all day. With the autumn sun hanging low in the sky you pull a map of the area from your pocket and make the decision to head off trail to reach a small town you believe is shorter walking distance away than the trailhead that is, by your estimate, still 20 miles away. With only a few hours of daylight left and minimal gear, you set off due east through thick undergrowth and thorns. The terrain immediately becomes a literal uphill struggle as the temperature continues to drop as the sun sets. Reality sets in as you accept the fact that you are lost and are not going to be able to hike out before dark.

You cringe as you lay your small day pack on the ground to access your gear as you already know that you are not prepared for a long cold night in the woods. The contents of your pack include a stainless water bottle, ferro rod, folding saw, knife, a paracord survival bracelet, and a small military style poncho. You quickly set up an improvised shelter using the poncho, build a fire, and begin to boil water from a nearby stream. As you lay in your shelter on a bed of leaves you remember that you had arranged a vehicle pick up at the trailhead and hope rescue will come at some point over the next few days once your friend arrives to find you're not there.



"REALITY SETS IN
AS YOU ACCEPT THE
FACT THAT YOU ARE
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TO HIKE OUT
BEFORE DARK."

After tossing and turning all night with very little sleep you awake to find several inches of snow on the forest floor. You know that you're going to have to build a cold weather shelter in order to stay warm until help arrives. You run through the mental catalog of survival shelters you've built in the past, weighing the caloric expenditures versus the benefits of each shelter design. Accepting you will likely be here for a few days and possibly even weeks, one specific long-term primitive shelter comes to mind...the wiki up.





[TOP, LEFT] Using ropes for a makeshift pulley system may be necessary to raise a large tripod into place if you're alone. Keep this in mind when building your wiki up with limited resources. The outside poles were both staked once the top of the tripod was above eye level. The middle pole was then pulled outward and lashed to a tree. The rope holding the top of the tripod was removed slowly to let the tripod fall into place.

[TOP, RIGHT] Roughly 15 feet of paracord were used to form a tripod lashing around the tops of the three poles. This was a safety precaution due to the weight of this structure. This isn't always necessary when building smaller structures if there is a shortage of cordage.

[BOTTOM, RIGHT] The wiki up is beginning to take shape as more poles are added. Notice how the poles are locked into one another using the forks of other leaning poles. This will ensure a secure hold even in high winds.

WEIGHT VERSUS SECURITY

In a wilderness survival scenario a reliable shelter is often first priority. A good shelter can keep you out of the elements and when combined with a fire, an effective micro climate can be created to regulate core body temperature. A number of factors can affect the type of survival shelter you choose to build. It is good practice to always carry some sort of a cover element in your backpack as it will save you the valuable hours of work required to build a primitive waterproof shelter that is equally as effective as a modern tarp.

The downside to carrying a tarp or other man-made shelter with you into the wilderness is that it will likely be the bulkiest item in your pack. And, unlike other essential gear, it cannot be easily attached to a belt or carried in a pocket. For this reason many times day hikers will not carry much for shelter with the intention of being home in a warm bed by nightfall. If one chooses to sacrifice security for pack weight in the case of shelter, they must possess the knowledge of a variety of emergency shelters.

WHEN TO BUILD A LARGE SHELTER

In an authentic survival scenario any caloric expenditure is a waste if the result of the use of calories doesn't improve your situation. This is especially true when it comes to constructing a primitive shelter with only a few tools. If you only need a shelter for one or two nights and are confident that you can make your way back



to civilization in a day's trek then there is no need to build an extravagant shelter. A simple lean-to with a roaring all night fire is enough to stave off hypothermia, even in freezing conditions. If there is no way of producing a fire then a lofty debris hut constructed of as much available natural insulation as possible should keep you warm enough provided you are appropriately dressed for the environment and don't get wet. For survival scenarios of an unknown length of time, few structures give the feeling of security and warmth like a wiki up.

WHAT'S A WIKI UP?

A wiki up is conical living structure that is constructed of straight poles that are lashed in place by vines or cordage and then shingled with forest debris or the bows of evergreen trees. A wiki up is essentially a poor man's tipi

made from trees and leaves. It is ideal for living long term in cold environments as it is one of the only large primitive shelters that can be easily built with minimal equipment and can safely contain a fire within its interior. Wiki ups can range in size and shape to be better suited for their intended use. A small wiki up can easily have enough room for one person to sleep and work. This featured wiki up has more than enough room for two people to sleep, work on projects, and even cook meals indoors.

SELECTING A BUILD SITE

The first step to any shelter build is to select the building site. Remember to look up to make that no “widow makers” are hanging in the trees above where you intend to set up camp. You’ll also want to avoid areas that have standing pools of water to avoid mosquitoes. Look for an area that has enough natural resources to yield the building materials required for this structure without completely depleting the forest.

This is a big project so be sure not to underestimate the amount of materials it will take to fully waterproof this structure. The last thing you want in a survival scenario is to be wasting calories dragging large trees through the thick forest. An ideal building site should have flat ground, abundant resources, and a thick canopy overhead to act as a first layer of roofing. Once you’ve selected an area, clear away any small brush or debris from the ground that the wiki up will directly stand on.

CONSTRUCTION

The construction of a wiki up begins with the selection of three strong poles lashed together to form a tripod. This tripod will be load bearing so it’s a good idea to use straight green trees for this. Raising the tripod can be a little tricky with a one man crew so you may have to get creative by making use of any cordage you may have to create a makeshift pulley system. One top of the tripod is raised above eye level staking the two outer poles will keep them from sliding. If done correctly even a large tripod like this one should raise into place as the middle pole is pulled outward.

After raising the tripod, maneuver the three poles so they are as symmetrical as possible. Pulling the back pole outward an extra foot or so will create an area in the back of the wiki up with a little extra head room. Keep in mind that a steep pitch will shed more water so don’t over extend the diameter of the tripod. It is better to have a small waterproofed living area than a



large shelter prone to leaking. Once you have the desired width and height of your tripod, place large rocks or stakes to the outside edges of the poles to secure them in place before adding any additional poles.

When gathering the additional poles keep the weight of the poles in mind. A wiki up is a semi-permanent structure and the poles will not only have to support themselves but also the hundreds of pounds of debris used for waterproofing. Using fewer poles and weaving a natural cordage, such as grapevine, will save you the hassle of cutting down a lot of trees. However, you will need to gather a larger amount of cedar bows to fully waterproof the structure.

On the other hand, completely enclosing the structure with poles will require less cedar bows overall to waterproof. However, it’s a lot

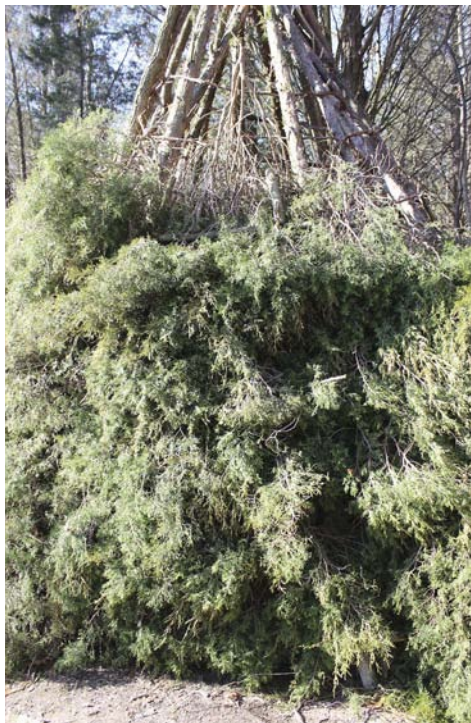
[TOP] The placement of the door is selected and a cross bar is attached to the structure using a simple lashing. This door will be roughly 5½ feet tall. A larger door will allow for more interior lighting during the day.

[BOTTOM] Grapevines were used to sync all of the poles together securely and also offer a way to attach thatching.



[ABOVE, LEFT] The door frame is made from two uprights and four horizontals all lashed together with paracord. An "X" is then made with paracord in between as a place to hang the first cedar bows.

[ABOVE, RIGHT] The completed door thatched with cedar bows. Notice how the tops of the two uprights extend beyond the top of the door frame. These will act as a hinge.



weak area from the lack of vines where the door will be.

THATCHING THE WIKI

The process of collecting thatching materials is without a doubt the most time consuming portion of the build. It is crucial that any primitive shelter is thatched from the bottom up like the shingles of a house to prevent leaking. When beginning the thatching process use larger cedar bows with the branches left on to encircle the bottom of the outside walls of the wiki up. These branches will serve as a starting point for attaching smaller

bows as you work your way from the bottom up.

If you run into a situation where there is nowhere to hook a particular bow, try squeezing it tightly together and then jamming it into the desired portion of the wall. The bow will expand and anchor itself as the tension is released. This technique works very well when patching small gaps in the roofing. There is no set depth measurement for how thick the bows need to be layered but two or three feet thick is a good starting point for wet environments. These bows will pack down tighter as they begin to decompose. They will need to be replaced eventually as the fire will dry them from the inside.

MAKING THE DOOR

Adding a door to a wiki up helps to trap the heat inside of the shelter. When the door is closed the entire structure becomes a sort of chimney and the fire will draft straight up as a result. To build the door frame, cut several saplings to length and lash them together with several cross beams. Making X's in between the cross beams with cordage will give you a place to hang cedar bows. When the door is not in use it can simply be slid over to the side of the doorway for easy access to the shelter during the day. By extending the length of the door's vertical poles, the door can be easily raised from the bottom and braced with a couple of Y sticks to serve as porch when desired.

of extra work and a lot of heavy weight hanging over head as you sleep at night should something go wrong. For this build, 15 green poles in total were used and interlaced with wild grapevines. The cedar poles will dry to a fraction of their green weight much like pine and the grapevines not only sync the structure securely together but also provide a way to suspend the cedar bows for thatching.

As you're placing your poles, try and lock the tops together by simply placing each pole in a different fork than the last. These forks will typically form naturally as poles are added. Keep in mind that at some point during the building process you will need to decide where to place the door. Once you've selected the door placement, add a header at the desired height of the door frame.

WRAPPING THE WIKI

Virtually anything pliable with a good tensile strength can be use to wrap the wiki up. This is typically decided for you by what is available in the immediate area. Grapevines seem to work very well. However, green saplings, roots and even modern cordage will work in a pinch. Simply weave the vines through each pole in an "over/under" fashion until you are satisfied the entire structure is solid and there are plenty of vines to hang the first layer of bows from. Be sure to wrap extra grapevine from the door frame to the top of the wiki up to prevent a

THE INTERIOR

One of the most enjoyable parts of building large primitive structures is designing the interior. Anything you can dream of from custom bunks to tables and chairs! In a primitive scenario a post bed would be a quick and effective option. By simply putting four logs on the ground in the shape of a small bed and packing in as many leaves, grasses, or pine needles as you can, you will be high enough above the ground to prevent conduction. For this build a cot was constructed using a cedar tree frame with cordage strung tightly in between. A small fireplace is located in the middle of the shelter for heating the wiki up during the night.

To say it took a lot of cedar bows to thatch this wiki up would be an understatement! Keep in mind this wiki up was built as a permanent Bushcraft shelter using only a handsaw and an axe. The exterior of this wiki up took an estimated 30 hours from start to finish with 20 of those hours being dedicated to thatching. A wiki up of this size is at least twice what the lost survivor would need, but it does show the massive scale of these shelters. **ASB**



By raising the door and adding to thick forked trees the wiki now has a small porch. A cot is made by building a cedar frame and weaving about 100 ft of paracord tightly in between.



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Trapping Small Game



THREE BASIC BUT EFFECTIVE DEADFALL TRIGGERS

Story and Photography by **Christopher Nyerges**

It's been three days and food is becoming an important concern. Surrounding you are many animals, most of which are too small and quick to be easily caught. You have no weapons and no immediate means to make any. Instead of trying to catch a small animal with your bare hands (there's a tremendous amount of luck involved) a more practical method would be to create a small trap and patiently wait for the animal to trigger it on its own. The best method readily available in most every environment is the deadfall trigger, something people have been using to provide dinner for thousands of years.

A deadfall is simply a heavy log or rock balanced precariously by an easily tripped trigger so that when an animal goes underneath and activates the trigger, the rock or log falls, either crushing, trapping, or killing the animal. They are easy to set up and work very efficiently provided you have the correct materials and needed skills to build one.



“INSTEAD OF TRYING TO CATCH A SMALL ANIMAL WITH YOUR BARE HANDS (THERE’S A TREMENDOUS AMOUNT OF LUCK INVOLVED) A MORE PRACTICAL METHOD WOULD BE TO CREATE A SMALL TRAP AND PATIENTLY WAIT FOR THE ANIMAL TO TRIGGER IT ON HIS OWN.”

TYPES OF TRIGGERS

There are many variations of the deadfall, but the big variable from trap to trap is the trigger mechanism. You want a trigger strong enough to hold up the rock or log, but you want it to drop at the slightest motion. You need to position your deadfalls on an animal run, or where the animals frequent, or you need to attract the animal to your deadfall with the use of bait. In other words, simply knowing how to set up any particular deadfall doesn't guarantee you'll capture anything. You need be practice, and you need to be very observant to animal activity in the area.

There are many possible trigger mechanisms, including the Paiute trigger, Figure Four, and Promontory Peg. All have their adherents and detractors. You should try all of these and then decide what works best for you.

WOOD SELECTION

Many woods will work fine and you might be limited with what is in your environment. Triggers



[OPPOSITE] A simple trigger, if properly set up and baited will provide a decent meal when stuck in the wilderness without sustenance.

[TOP LEFT] The Promontory Peg uses only a single piece of wood carved into two to three pieces.

[TOP RIGHT] Setting up a Figure Four trigger requires patience and balance.

[BOTTOM] When done properly, the slightest movement of any of the sticks will allow the deadfall to crash down.

will work best if made from dry wood, not green wood. Green wood may bend from the pressure of the rock, and may not release as quickly as dry wood.

I have nearly always used pieces of mulefat when making these triggers, because mulefat has long and straight twigs of an even thickness without knots or bends. Plus it is very common where I live.

Straight shoots of willow would work fine also, and willow grows world-wide.

The type of wood is not all that critical, but it should be relatively straight, and should be dried wood. I have seen a trigger carved entirely from one large piece of unknown driftwood which was picked out of a pile.

Trapping

Small Game



[TOP] Though the Paiute Deadfall looks more complicated than the others, it is the most efficient and is triggered by the animal the easiest. The difficulty may be in sourcing the twine needed, but remember your boots have shoelaces.

[BOTTOM] Demonstrating how the slightest nudge brings down a Paiute Deadfall.

FIGURE FOUR TRIGGER

This trigger is made from three straight twigs, and it looks like the number “4” when it is set up, which is why it is referred to as the Figure Four. Begin by cutting three pieces, no bigger than your little finger and about 10 inches long. This is just for illustration, because in real trapping scenario, the size of these pieces is wholly dependent upon what animal you are intending to trap, and therefore, how large or small it will be.

Begin with the vertical piece. Cut the top to a flattened edge, like a knife. Next, cut a notch into the diagonal piece so the diagonal can rotate on the top of the vertical piece. Then, cut another flattened, knife-edge on the bottom end of the diagonal piece, which will push onto the horizontal piece. Then cut another notch, as

A closer look at the pieces that make up the Promontory Peg.



“NO TWO ROCKS OR LOGS ARE ALIKE, SO YOU HAVE TO LEARN TO BE CREATIVE AND TO TWEAK THE WHOLE SYSTEM IN ORDER TO GET IT TO WORK.”

illustrated, on the outer edge of the horizontal twig where the diagonal will fit into it. Each piece needs to fit precisely into the next piece, so take your time as you carve them.

Now, observe where the horizontal piece overlaps the vertical. You’ll need to cut it so the horizontal piece grabs the vertical. Carve a square edge onto the vertical, and then a corresponding 90 degree cut into the horizontal. If you have made all your cuts “just so,” the weight from a rock or a log will produce the needed pressure to keep all three pieces of your trigger together.

When I carve this, I use my left hand, pressing down on the diagonal piece (where a rock would be pressing) to test how well the three pieces hold together. You have to use a bit of finesse to get the weight in just the right place. It is designed so the slightest bump from the animal will cause the trigger to collapse, sending the rock onto the animal. And yes, no two rocks or logs are alike, so you have to learn to be creative and to tweak the whole system in order to get it to work.

It sounds really complicated if you've never made one, but it's all very logical. I learned how to do this by watching others. One of the best on-screen explanations is Ron Hood's "Traps and Trapping" DVD.

PAIUTE DEADFALL

The Paiute trigger requires the same beginning vertical piece as the Figure 4 trigger, and the diagonal. However, the lower end of the diagonal is not carved. Rather, you tie a string onto it. The string must be long enough to pull horizontally to the vertical piece, and a little twig about an inch long is then tied to the end of the string. The twig wraps around the vertical post, and is held in place by a longer, slender twig which is placed from that little twig to the bottom of the deadfall rock or log. This longer slender twig is held in place by friction.

Though this seems a bit more difficult to set up, trappers have reported this trigger works just a bit better than the Figure Four.

THE PROMONTORY PEG

The promontory peg is a simple trigger made from one piece of wood. It is named after Promontory, Utah, where archaeologists kept finding the triggers in caves, but weren't sure how they were used, and assumed a piece was missing.

Larry Dean Olsen (author of *Outdoor Survival Skills*) offered \$100 to anyone who could figure out how the trigger was used. Finally, George Michaud, trapper (who appeared on History Channel's "Mountain Men"), demonstrated at a Rabbit Stick event how the trigger worked, and he collected his "crisp" \$100 bill.

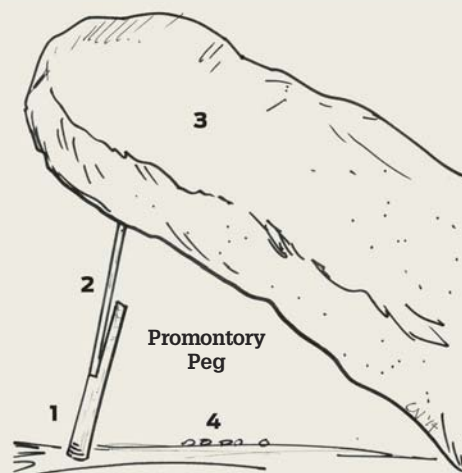
Make three cuts onto a straight twig. Then carefully bend the wood from both sides, until the wood flakes at the cuts and breaks into three pieces. If the three pieces do not break cleanly, you might need to clean the pieces with a knife. Then you set it up as a deadfall trigger. Michaud insisted this trigger doesn't work at its optimum unless the twig is cut with a sharp stone, like obsidian or flint, or knife.

Carefully balance piece Number 2 on one of the pieces Number 1 (see illustration), and then carefully balance the deadfall rock to top. You can sprinkle some bait to attract your prey under the deadfall. Attach some bait to the upper tip of piece Number 1 as well to make sure the animal trips the trap. **ASB**

Note: There are many trigger systems, not just the three mentioned here. Keep in mind these may not be legal to use where you live for taking animals. The taking of an animal's life is a serious matter, and should never be done for fun or sport. If you kill an animal, you must eat it.

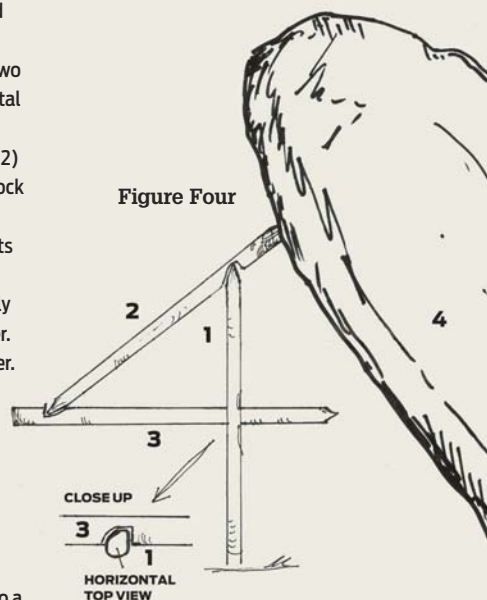
The Triggers in Detail

THE PROMONTORY PEG DEADFALL requires exact cuts and precision balancing in order for it to work properly. Once cut, balance (2) on (1), and then balance the deadfall rock or log (3) to top. It is best to do this all at the same time. Attaching bait to the top of piece Number 1 to make sure the animal trips the trap.



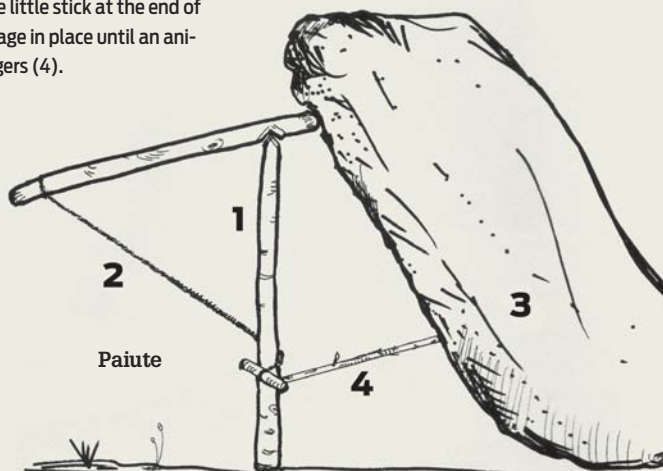
HOW A FIGURE FOUR WORKS:

Piece (2) holds up the deadfall and (1) fits into a notch carved on the bottom side of (2). The lower end of (2) is carved on two sides so it fits into the horizontal stick, (3). A cut-out on (3) receives stick (2), and allows (2) to transfer the weight of the rock onto (3). This weight on (3), twists the notch where it meets (1) and allows (3) to link with (1). This pressure is what barely holds the whole thing together. The more precarious, the better.



PAIUTE DEADFALL

For the Paiute Deadfall, the upright stick (1) has a V shape carved into the top end, which the diagonal stick, (2), rests upon. The cordage of (2) is wrapped around (1) and tied to a little stick. The bait stick (4), holds the little stick at the end of the cordage in place until an animal triggers (4).



DETER DELAY DEFEND

THE THREE ELEMENTS TO A SOLID SECURITY PLAN

Story and Photography by **Jim Cobb**

When you talk about security to preppers and survivalists, typically the conversation revolves around how many firearms to acquire and how much ammunition to stockpile. However, that's only one piece of the puzzle, and, in fact, it isn't even the most important piece. Whether we're talking about a security plan for a family of four or a large multinational corporation, there are three basic elements involved, with each leading to the next. They are Deter, Delay and Defend.

DETER

Human beings tend to make many if not most decisions on a risk versus reward basis. It doesn't matter if we're talking about whether we should go out with our buddies Friday night or whether we should rob a bank, we weigh the risk of getting into trouble and whether the potential payoff is worth it.



PHOTO BY THINKSTOCK

From a security standpoint, deterrence works in two basic ways. We can work on increasing the risk or reducing the perceived reward. For example, employing various means of disguising the home so it looks run down, even abandoned, can cause someone to believe there is probably nothing of value inside and they'll hopefully move on to a more tasty target.

The downside, though, of making your home look uninhabited in some way is that it will likely only work on people who don't live in your area. Your immediate neighbors are sure to know you're still there, no matter how well you've made your house look burned out.

Part of deterrence falls under the OPSEC (Operations Security) umbrella. OPSEC refers to that old motto of "loose lips sink ships." In other words, keep your mouth shut about your disaster preparations and don't give guided tours of your extensive food storage. If after a major disaster most of the neighborhood is lining up for handouts at the makeshift soup kitchen in the park and you consistently have bacon breath, you're setting yourself up to be a target. You are increasing the perceived reward to someone who is considering breaking into your home.

The flip side is to remember that sometimes the best defense is a strong offense. Increasing the risk to where it likely outweighs the perceived reward is a viable approach in many situations. Making it obvious you have one or more dogs can sometimes be all it takes for the bad guy to seek fame and fortune elsewhere. Similarly, visible evidence of security measures such as motion sensitive lights and signs advertising the presence of an alarm system often work very well.

The whole point of the deterrence element is to cause a potential intruder to decide the reward isn't worth the risk and to move on to an easier mark.



Motion sensing light fixtures help alert you to intruders while illuminating the situation.

DELAY

In the second element of your security plan, the idea is to increase the amount of time it will take for an intruder to be successful in their plan. The longer it takes for a burglar to gain access to your home and loved ones, the more time you have to detect their presence and take whatever action you feel may be necessary. For example, by planting thorny plants such as hawthorn bushes under our windows, we create an obstacle that must be overcome in some fashion. If you've ever tangled with hawthorn, you know what I mean. The thorns are truly like needles, penetrating all but the most durable of garments. The burglar will either need to move slowly so as to avoid being pricked multiple times or they'll need to choose a different entry point.



Take a good, hard look at the perimeter of your home. Are there certain areas where intruders are most likely to travel as they approach your home? For example, let's say you have an outbuilding that is fairly close to your home. Joe Burglar may want to use that structure as cover as he surveys the scene. By placing some loose brush behind the building, you'll make it a bit harder for him to be stealthy. Go a step further and run a trip wire from the brush to an alarm. When he moves the brush aside he pulls on the wire and activates the alarm.

Strong locks on all doors and windows mean a quick and easy entry isn't at all guaranteed. They'll need to spend extra time dealing with them in some way, whether by picking the locks or just smashing the window or door. If they choose the latter, you're likely to become immediately aware something is amiss.



Thorny shrubs will slow down intruders, and braided fiber fishing line makes a great tripwire.

AVOID GIVING OUT TOO MUCH INFORMATION

I suggest you decide against purchasing threatening signs, such as the ones that say things like, "Nothing here is worth your life," or, "This house is protected by Smith & Wesson." The reality is these and similar signs do little other than suggest an intruder can probably find firearms inside the home. The only way that works in your favor is if you are home and pointing the handgun at them as they come through the door or window. Otherwise, all you've done is increase the potential reward in their mind.

Signs proclaiming your son to be a member of the local football team or your daughter a member of the swim team tell a burglar that no one is likely to be home when the team is playing, such as during Friday night football games.

Take a look at the cutesy or humorous signs you may have posted on or around your home. What information are you giving out without realizing it?



Security cameras can help keep an eye on things and can be programmed to sync with your computer and phone/tablet.

Alarm systems, whether professionally installed and monitored or of the more DIY approach, will also help with alerting you quickly if someone gains unauthorized entry to your home. One product I particularly like is the Brite-Strike Camp Perimeter Security System (Source: brite-strike.com). It consists of a base unit that attaches to the wall and a small pin with an attached split ring. When the pin is pulled from the base, a 130db alarm goes off. Suffice to say, this will get your attention.

A slightly less sophisticated approach would be to hang an obnoxiously loud wind chime on the inside of your door. Any time the door is opened, you'll hear the chimes. During the holiday season, perhaps replace the chimes with sleigh bells. You could go even one more step down the food chain, so to speak, and just place a few empty glass bottles where an opened door is likely to knock them over. Tin cans with pebbles or marbles inside works on the same principle. Very simple yet effective.



Brite-Strike's Camp Alert Perimeter security system is a great early warning device.

Anything you can do to either slow up the bad guy or decrease the time it takes for you to discover them will work in your favor.

DEFEND

In many ways, resorting to active defensive measures indicates a failure in your security plan. It is what remains if your efforts to deter

and delay the intruder have not worked. Taking positive action against an intruder is not something to enter into lightly. You need to act quickly and decisively.

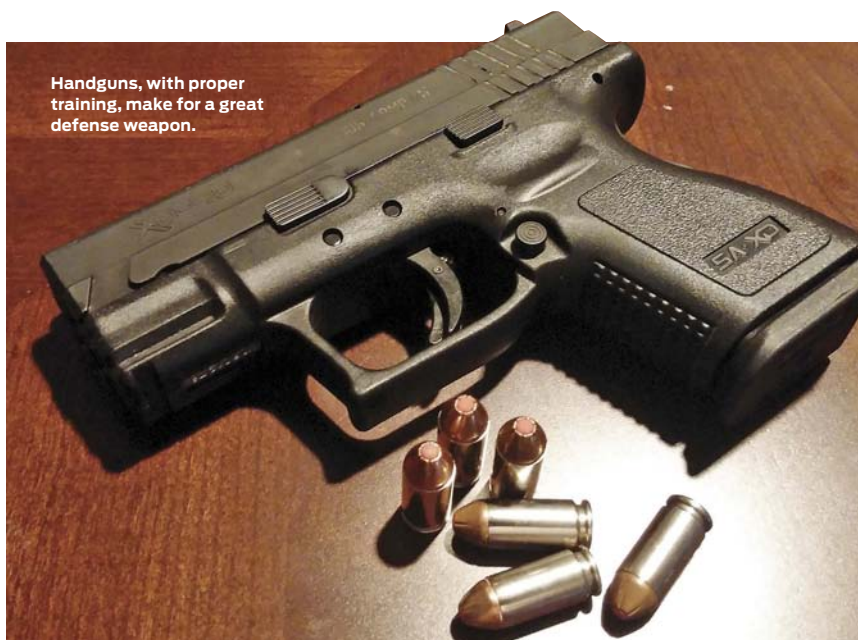
Deciding on a course of action is something you should give serious thought to before it becomes necessary. I strongly advise you to become intimately familiar with your local laws regarding self-defense, such as whether your state has a castle doctrine law. Simply put, castle doctrine says there is no legal duty to retreat from someone invading your home. Remember, even if the invasion is occurring in the aftermath of a major disaster, at some point order will likely be restored and you may have to answer for the actions you took. More than one homeowner has used deadly force to protect their family from a home invader and ended up on the wrong side of the law themselves. Better to do your homework in advance and have a good handle on what is legally allowed and what is not.

For most people, defense involves the use of firearms. If this is your own chosen course of action, do all involved a favor and obtain training in the safe use of the weapon. Know how it works and become proficient in its use. Be wary of the risk of over-penetration. Without taking that into consideration, you may indeed shoot the intruder but the bullet traveled through him as well as the wall behind them, injuring or even killing a loved one in the next room.

For non-lethal options, consider pepper spray. Look for the types that shoot a stream rather than a spray or fog. The stream is far easier to aim and you'll have less risk of any of the chemical blowing back at you. Aim for the face and keep spraying until the intruder goes down. Electronic devices such as stun guns work as well, provided they are legal to own in your area. Keep in mind, though, that you'll need to be within arm's reach to be able to use the stun gun. If you are close enough to touch the intruder, you are close enough for them to grab you, possibly disarming you in the process.

I don't advocate employing any sort of bladed implement as a self-defense weapon unless you are trained in the proper use of it. Further to that point, you are just as likely to get cut yourself as you are to injure your assailant.

No matter which sort of defensive measures you employ, the goal is to disable the intruder to such a degree that you can get away from them, preferably getting yourself out of the home completely, and get help. I realize there is a certain mindset among some survivalists that encourages the use of what is sometimes



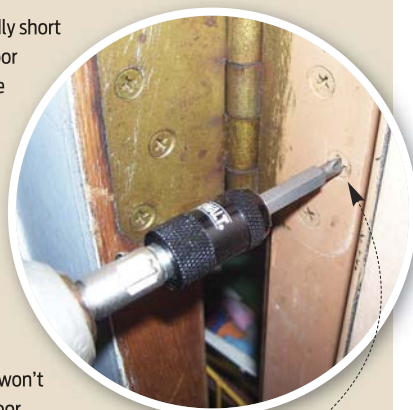
Handguns, with proper training, make for a great defense weapon.

called the Three Ss – Shoot, Shovel, Shut up. While that might work for a small percentage of preppers, most will be best served by putting the intruder down as quickly as possible, then calling for assistance from the local authorities.

Security planning needs to involve several components. Just investing in a few firearms isn't nearly enough. If the only tool you own is a hammer, then every problem looks like a nail. While the judicious use of a hammer might indeed dissuade an intruder, give serious thought to all three elements of your plan – Deter, Delay, and Defend. **ASG**

Replace Hinge Screws

Most doors are installed with decidedly short screws attaching the hinges to the door frame. It won't matter how strong the lock and deadbolt are if the thief can simply kick their way in on the hinge side of the door. Head down to your local hardware store and purchase a handful of three inch wood screws. Open your door all the way to expose the hinges. Remove the screws going into the door frame and replace them with the longer wood screws. If you do this one by one, you won't need to worry about rehanging the door.



Replacing hinge screws with longer ones is a quick and easy way to strengthen the door.

The **BUSHCRAFT** Movement

DON'T JUST SURVIVE, THRIVE

Story and Photography by **Ryan Lee Price** and **Clint Jivoin**



When the Lycoming engine of Marcus Jacobson's 1960s-era Super Cub sputtered to a wheezing halt at 4,000 feet, just 100 miles northeast of the small airstrip in the Gwich'in tribal village of Venetie in Alaska, Jacobson immediately looked for a place to set down, knowing his day was about to change for the worse. Below him surged and swelled the unforgiving nature of northern Alaska, one of the few remaining places in North America that does not suffer for the faint of heart. In the unnerving din of the wind rushing around the plane, he made contact with the tower in Venetie and reported his situation and rough position.

Coarse landings were nothing new to Jacobson. As an Alaskan pilot for 13 years, he had landed the orange-striped Piper PA-18 in more precarious places than a relatively flat tundra dotted with clumps of Alpine Bluegrass, although the initial touchdown on the uneven ground was nothing but jarring. The Piper needed only about 300 feet to come to a stop, and Jacobson rolled it just to the edge of a small creek that sliced through the northern corner. Tall stands of birch and spruce ringed the open field.

Jacobson would spend two frigid nights in that field waiting for rescue; an electrical issue shorted out all electronics and he spent most of his idle time working on the plane. Jacobson isn't what you'd call a survivor; he's not a prepper; and his ordeal happened long before the term Bushcraft came into vogue. However, Jacobson, a Swedish native from the small idyllic town of Arvidsjaur on the banks of the Byskeälven river, where he learned to hunt hazel grouse and elk, fish for brown trout and perch, and fly his father's airplane. Jacobson, with a lifetime of knowledge of the outdoors, was no stranger to self-sufficiency.

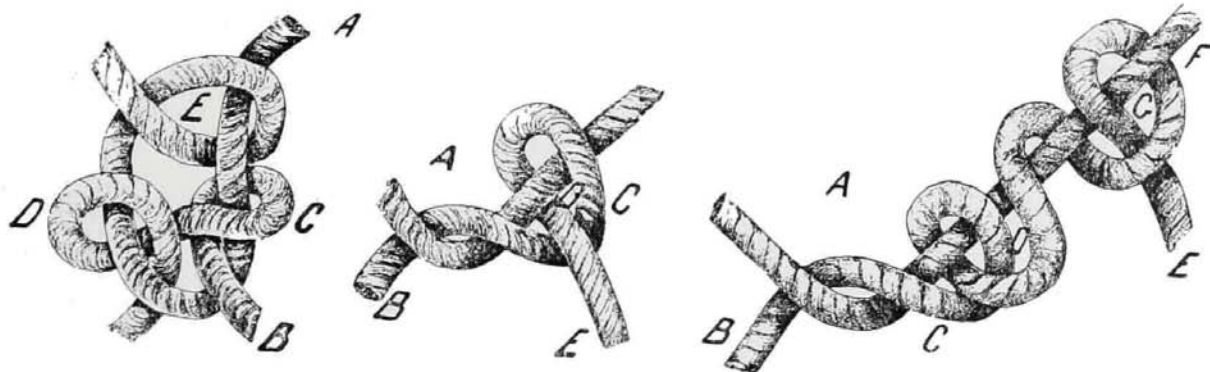
Opening the door of his downed Piper he immediately assessed the situation. There was water close by, which meant food too. It was early June and still quite cold, but he knew spruce is a soft and dry wood that burns easily. In the back of the plane, he kept a small bag containing a few items essential in a situation like this: a good knife, flashlight, some rope and a set of small tools. Though he had never been in this exact situation before, he was confident rescue would be imminent and he had the knowledge necessary to carry him through the tribulation.

Jacobson was a Bushcrafter long before he ever heard the word spoken.

WHAT IS BUSHCRAFT?

In the realm of what is often referred to as "survival skills" there are a number of specialized skill sets, each containing enough information and different techniques to require a lifetime of study and practice to fully master. One of these specialized skill sets involves a collection of wilderness skills and all around woodsmanship that has come to be known as Bushcraft. It is more of a mental state of preparedness than a physical





set of achievements. Anyone can read in a book about 10 different ways of starting a fire with an old rag and a fifth of scotch, but until you actually do it, the knowledge is academic. Bushcrafters learn by doing and practice by accomplishing the task to survive for another day.

Though a couple of hundred years old (one of the first mentions of the term is found in Ernest Favenc's 1888 book, *The History of Australian Exploration from 1788 to 1888*), the modern Bushcraft movement began with Richard Harry Graves, who founded the Australian Jungle Rescue Detachment during World War II, and afterwards taught a Bushcraft school and wrote a book titled *Australian Bushcraft: A Guide to Survival and Camping*. Since then, at least in the English speaking countries besides America, the Bushcraft movement began to flourish, becoming popular thanks to the recent onslaught of survival-based "reality" shows.

One of the premiere Bushcrafters is "The Bush Tucker Man," Major Leslie James Hiddins (ret.) of the Australian Army. After a very successful career he was tapped to steer the direction of the Australian Army Survival policy for Special Forces. In 1982, he began the Army Combat Survival Project based at Lavarack Barracks, and he is the principal author of the Army's Combat Survival Manual, which was published in 1987. Retiring two years later, Hiddins spent most of his life trekking the unforgiving Australian outback in search of "bush tucker," a down-under term for food made by the aborigines. He teaches classes and seminars on the skills needed to be successful in the outdoors, a concept termed Bushcraft.

Bushcraft consists of taking wilderness immersion to the next level by using what nature provides along with a few modern tools to craft the necessities and even luxu-

ries one may desire while spending time in the wilderness. With a good understanding and practice of these techniques, one can truly carve out a home in the wilderness and even begin to thrive over time. The more a person relies on their well-honed skills, the less equipment they will feel the need to take into the woods, as they will be capable of producing most everything they desire straight from their environment. With Bushcraft, the possibilities are seemingly endless, as the wilderness becomes a canvas for the woodsman to create virtually any structure he can dream up, for the hunter to choose from a variety food sources, and for the survivor to outlast and overcome the dangers imposed by nature. To those that have embraced the lifestyle and gained the knowledge, this is an ultimate freedom...this is Bushcraft.

BUSHCRAFT SKILLS

Before saying goodbye to society and tromping off into the woods to live a Thoreau-ian life of solitude with nature and declaring yourself a Bushcrafter, you must first spent a little time — say, a few years at least — dipping your toes into the pool first before you jump headlong.

Though there is much information about the various skills needed to learn in order to label yourself a Bushcrafter, there is no one all-encompassing list that is universally accepted. It depends on a lot of factors, but mostly the area you live and/or travel to. Skills needed in the desert will be different from those needed in the forest or on a mountain versus being stuck in the Arctic. However, there are the basics.

► **Shelter:** This is probably one of the easiest skills to master.

The basic concept is to build a shelter to keep out the weather, be it from the blister-

ing sun in the desert or a drenched rainforest. The difficulty lies in anticipating the changing weather, finding suitable materials and locating a place to build.

For a Bushcrafter, the goal is to build something that will last for years rather than simply surviving a couple days. Choices to consider include thatched huts made from reeds, grasses and palm fronds, lean-to huts from sticks, logs and moss, as well as elevated platforms needed in swampy areas. To provide a permanent shelter from the elements, a host of skills are needed to use the materials at hand.

► **Fire:** An essential skill is the ability to make fire no matter where you are, what you have in your possession and what the weather is like. Fire is protection from the elements. Fire provides warmth, a signal, mental stability and a place to cook meat and boil polluted water. Building and maintaining a fire should be one of the first skills a Bushcrafter stamps into his memory. This involves not just lighting the fire (by match, flint, bow, friction, etc.), but finding adequate wood for the type of fire you need (small dry sticks for a smokeless fire, large green branches for a signal fire, dry wood for

a hot fire and hardwood for a long fire), as well as knowing how to direct the heat and light of the fire in a particular direction (a woodshed will keep the fire dry if in a storm, while a series of tall rocks will reflect the fire's heat toward your camp).

► **Food and Water:** Nothing survives without food and water and don't even consider thriving without an excellent source of food and water. A mule deer won't just drop dead in front of you, and without knowledge of hunting, flora gathering, water purification, meat storage, dressing and cooking, your Bushcrafting days are numbered. In most wild areas of the world, food and water can be found in sufficient quantities, but people's largest fear when pressed into a hunger situation is that the plants are poisonous, the animals full of parasites, and the water contaminated. A Bushcrafter knows which is what and how to prepare it to consume without worry.

► **Tracks:** Reading and knowing what animal tracks have been left is merely a trick of memorization. A rabbit's tracks look one way when it is walking and another when it is running, while a deer's tracks are entirely different, of course. If it has a "thumb" it

"WITH A GOOD UNDERSTANDING AND PRACTICE OF THESE TECHNIQUES, ONE CAN TRULY CARVE OUT A HOME IN THE WILDERNESS AND EVEN BEGIN TO THRIVE OVER TIME."

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climbs trees; if it has prominent center toes, it digs burrows; if it has claws, it eats meat, and if it has hooves, it eats grass.

The difficult part is knowing where to look for these tracks. Learning to observe the landscape first is as paramount as discovering what kind of animal left the tracks you are seeing. A bird that doesn't live on the ground, like a Mourning Dove or an American Goldfinch, hops instead of walks, whereas most ducks and geese spend a considerable amount of time on the ground, therefore their tracks show a similar gait as a human (one foot in front of the other, sort of).

Tracks indicate habits, and animals are definitely creatures of habit. A Bushcrafter knows their habits.

► **Snares and Traps:** Observing the signs of animals — and maybe the animals themselves — is one thing, but converting them to dinner is entirely different.

► **Ropes and Knots:** If you have plans to build a quality shelter with any kind of permanency or strength, you'll need to know a host of knots and how to make rope from what's found in nature. Almost any naturally fibrous plants (grass, palm bark, vines, reeds, etc.), as long as it is pliable and has a rough texture, can be made into adequate rope and anything over a foot long can be braided into a continuous strand. Know which braids will work best with which plants. For example, the three and four plait and lariat plait work well if made from rounded vines, while the broad plait or flat plait should be made from flat reeds.

Though there are hundreds of knots, a Bushcrafter need know only a half dozen or so to be successful. The sheet bend is good for joining rope. The bowline or slip knot are good knots if loops are needed. Any of the hitches (clove, rolling, boat) are good when items need fastening down (most knots fall under this category). Whereas there are a host of specialized knots geared for specific

tasks, like lashing, making rope ladders, or for "pointing" a rope.

► **Navigation and Time:** Where are you? Where have you been? Where are you going? And how long will it take? These are questions best answered with the aid of a map, compass, and watch, but sometimes you won't have those items, especially if your survival skills are called upon suddenly and without time preparation. Knowing how to read the land, tell time from the sun/moon, and to navigate in a desired direction are essential. This requires a broad spectrum of skills, from knowing the constellations to understanding how mountains are formed and where rivers go.

DO YOU HAVE WHAT IT TAKES?

People have to endure many years of school to call themselves a doctor and even then, they refer to it as practice. Teachers need four extra years to learn how to teach children elementary skills. This is no different if you want to join the ranks of the Bushcrafters. If you do, you'll discover it is more than just a movement; it is an achievement, a mindset one obtains that gives him the confidence to know he will survive. Bushcraft shapes a person's character, his soul, his inner-monologue about how he sees the world and the events that transpire around him. It puts him in touch with his forefathers, who carved out a place for themselves, not with the help of a smartphone or \$300 boots, but with tenacity, integrity and a fortitude only found in those that have faced adversity and triumphed in spite of it.

Remember, Nobel Prize-winning German playwright Elias Canetti said: "Our forefathers did without sugar until the 13th century, without coal fires until the 14th, without buttered bread until the 16th, without tea or soup until the 17th, without gas, matches or electricity until the 20th." However, they survived. Imagine what you can do. **ASB**

My Top 12 Bushcraft Gear

By Clint Jivoin

The idea of Bushcraft doesn't require one to shun all modern conveniences; it is so when those modern conveniences aren't around, you are still able to thrive in potentially hostile climates and environments.

1 A good full tang fixed blade knife is number one on the list for good reason. There simply is no substitute for a steel blade in the wilderness, especially when your life depends on it. The best survival or Bushcraft blade is the one you have when you need it. This 8 3/4 inch long "Backwoodsman" by Battle Horse Knives is a functional medium-sized Bushcrafting knife compact enough to be worn all day long, guaranteeing it'll be on your side when you need it most.



2 A ferro rod throws hot pieces of molten metal when scraped with the spine of a knife or, in a pinch, a sharp hard rock. A ferro rod will guarantee sparks in any conditions, however, it doesn't guarantee fire. If you intend to only rely on a ferro rod and natural tinder in the woods, it is important you purchase a large ferro that is 1/2 in diameter and 5 to 6 inches long. More scraping surface mean bigger sparks and bigger results.



3 A stainless steel bottle has a number of benefits over plastic. Stainless bottles can take a serious beating and more importantly you can boil in them. This allows for purifying water in the woods easily and the warm bottle can be used for a little extra heat at night. This Pathfinder bottle is exactly 32 ounces to the rim, which makes chemically treating water a no brainer. The bottle cup is excellent for cooking teas and soups.



4 Every woodsman needs a good reliable tarp. This 10 foot by 10 foot oil skin tarp by Tentsmiths can be easily set up in multiple variations using the attached heavy duty loops. While this tarp isn't fireproof it is still possible to have a controlled fire near the shelter for warmth as long as caution is used.



5 A good folding saw is a must for Bushcrafting as it will allow for faster processing of wood and is much safer than an axe. The Laplander folding saw is one of the most popular folding saws for survivalist and Bushcrafters alike due to the flexible steel. This allows the blade to be quickly repaired in the field.



6 A good axe is essential for long term wilderness emersion. A sharp axe can be used for everything from felling and splitting trees to processing game and detailed wood carving tasks. An axe requires experience and caution to safely be used in the bush as axe injuries can be devastating especially when you are miles from the nearest trail head.



7 A good wool blanket is worth its weight in gold when it comes to Bushcraft. A wool blanket, while not as warm as a down sleeping bag, is incredibly multi-functional as it can be worn as an outer layer and retains the majority of its insulation value even when soaking wet. A wool blanket can also be used safely when sleeping next to an open fire, which is a must for Bushcrafting in colder environments.



8 A variety of cordage gives the ability of multiply tasks in the wilderness. Paracord is best reserved for building shelter and other structures.



9 Fishing hooks and needles are two of the most difficult items to reproduce primitively in the wild with comparable results.

Fortunately, they are tiny and lightweight enough to be tossed in a small tin and carried unnoticed in a pocket. Keep in mind that when combined with bank line in a life or death scenario, fishing hooks can catch a lot more than just fish and turtles.



10 A fire will usually produce enough light for most camp tasks to be preformed at night. A headlamp should be carried and a precaution for self inflicted wounds such as knife injury. The light will also allow for much easier hiking at night provided you are forced to abandon camp to seek professional medical attention.



11 This MSR Seagull is an excellent cooking pot and doubles as a sealed container for carrying the smaller items of your kit as well as spices and rations.



12 Gorilla tape is an extremely durable adhesive tape that has literally countless uses, such as fire tinder, first aid and makeshift water containers.



Practice Makes Prepared

HONING YOUR SKILLS TO PERFECTION TAKES TIME AND PATIENCE

Story and Photography by **Larry Schwartz**

There are an amazing number of ways today that you can learn about survival that were not available even 10 years ago. Magazines like *American Survival Guide*, *New American Homesteader* and *Modern Pioneer* have articles in every issue introducing you to concepts and techniques that you never heard before and how-to guidance on skills everyone should have. Video websites like YouTube and Vimeo have literally hundreds of videos from dozens of sources showing you how to do everything from building a fire to what to put in your backpack to how to build a space heater or an air conditioner from the same five gallon bucket available at your local home improvement box store.

Psychologists and professional trainers have known for decades that to truly integrate a new piece of information, especially if it involves physical or mental skills, you need to actually use that new information in a practical, real world way. That is why your math teacher gave you ten problems to work through as homework every night and your third grade teacher gave you sentences to diagram so that the various parts of a complete sentence became second hand to you. Using information in a practical way is the best way to integrate it into your thinking.

Only through actual practice of a new skill do you gather the insights



PHOTO BY THINKSTOCK

You've read about how to seal your windows against the blowing rain from a hurricane, but it's a good idea to practice it before the storm arrives to make sure you understand the little kinks you will run into because the window frame isn't clean or that plywood sheet isn't cut perfectly square.

and experience enabling you to perform that new skill in any situation you might find yourself in. For example, how dry does your tinder need to be to get your fire going? How tight is too tight when you wrap the gauze around a wound? Can you stay on a bearing when using your compass to navigate in the backcountry woods?

SKILLS ARE PERISHABLE

Many times our skills are a very perishable resource, especially when they have to be performed quickly, like in a first aid situation, or if you don't use them very often, like starting a fire or tying a specific knot. For

that reason making sure you practice them is important. There isn't any one best way to keep on top of your skills, but there are three that work well together.

One of the simplest ways to practice is to integrate them into your daily routines. Pull out your flint and steel when you need to light the charcoal grill or the gas stove in the kitchen. Sharpen your kitchen knives by hand instead of using the electric sharpener or sending them away to get sharpened. Make an adhesive bandage with tape and a gauze pad instead of using a Band-Aid.

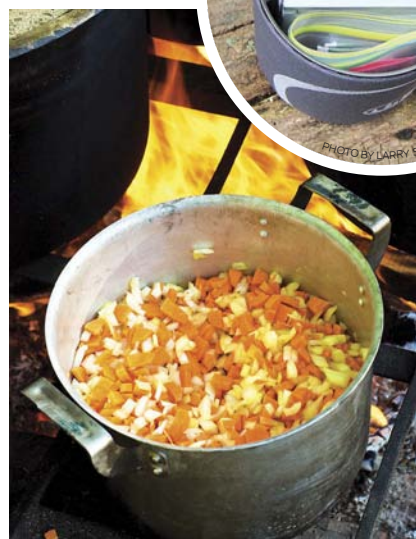
The second way to keep in practice is to attend one day or weekend

seminars as a refresher. There are dozens of groups and individuals who teach a wide range of skills throughout the year and throughout the country. In addition to being a great way to refresh your knowledge base and to get some more hands on practice, these seminars are also a good way to learn new or advanced skills. Several also sell videos and online classes you can use to refresh and expand your knowledge base. Courses are available on topics including outdoor survival, emergency preparedness and first aid.

A third way to practice is to plan events where you have to use your skills. If you want to top off your outdoor survival skills you can take a camping trip or go backpacking. Set up your regular campsite as a fall back option, then find out if you remember how to build a fire without matches or with wet wood. Pull out your tarp and try setting it up in the dark and make sure you can still get it tight and tie that taut-line hitch. Use your water purification tablets or filter pump to get your water instead of opening that bottled water you brought from the supermarket. Use your compass and hike cross country for a half hour, try to find yourself on the map, then turn on a new bearing for another half hour and then find your way back. While you are out enjoying nature you can also see how far you can really walk with your bug out bag on your back and if you can actually walk that “average of three miles per hour” like the experts say you should be doing.

HURRICANE PARTY

If your main focus is prepping for an emergency rather than taking care of yourself in the outdoors you can treat yourself and your family to a “hurricane party” by turning off your electricity and water supply and see if your plans are as complete as you thought they would be. You might find filling the bathtub to create your emergency water supply would have worked a lot better if the tub was clean before you tried to fill



[TOP] Anyone who tells you making a fire the first time is easy probably does not remember the first time they tried it. The concepts are easy, Air + Fuel + Flame = Fire, but getting the right sizes of sticks and tinder and the right level of dryness can be daunting.

[BOTTOM, LEFT] A quiet weekend when you have plenty of time is a perfect time to practice your first aid skills dressing a wound and then doing it again the right way.

[BOTTOM, RIGHT] Cooking over a wood fire or charcoal fire is much more challenging than cooking over a gas or electric powered stove in your kitchen.

[INSET] Pull out that small pot on a hike, start a small fire and make yourself some soup or hot chocolate during a fall hike.

“ONE OF THE SIMPLEST WAYS TO PRACTICE IS TO INTEGRATE THEM INTO YOUR DAILY ROUTINES.”

it. That tub-sized water reservoir may look like a better deal than when you looked at it last year. See what it is like to cook meals on a propane camping stove or on your charcoal grill when your kitchen oven and stove are not available. You may find the choice of freeze-dried food for your meals (instead of stockpiling canned food) may not sit too well with your family and uses far more of your limited water than you expected. Or that you forgot to get a manual can opener so you can access the wall of canned food in the basement.

And now that you brought your skills back up to the level you want them at don't stop there. You are not the only person in your group or in your family who needs to know these things, so as you get more proficient make sure you teach others so they can fend for themselves or be a backup if you are not available, or if you get injured. **ASB**

Cooking in the Sticks

HOW TO BUILD A BUSHCRAFT KITCHEN

Story and Photography by **Clint Jivoin**

In a true wilderness survival scenario, various bushcrafting techniques can play a huge role in affecting survival right from the beginning as many of these techniques are essentially primitive skills. By applying these techniques, everything from crafting water containers to building shelter and making friction fire can be made much more obtainable when faced with limited time or a lack of proper equipment. Once all acute survival needs are met, bushcrafting techniques can make life in a bad scenario tolerable and possibly even enjoyable at times. Whether you're in full-on survival mode or just out camping for the weekend, building a multifunctional kitchen setup is one of the biggest steps you can take to improve life in the wilderness.

THE KITCHEN ITSELF

This multi-functional kitchen setup allows wild or store-bought food to be prepared and preserved in a number of different ways. While it's obviously a little overkill for a short-term survival scenario or that quick overnight camping trip, it does give the user the ability to cook pretty impressive meals to perfection and is a great addition to any long term permanent camp or wilderness man cave. From baking wild roots and grilling venison backstrap to making squirrel stew and wild turkey jerky, this style of kitchen does everything but hunt the food for you!





"FROM BAKING WILD
ROOTS AND GRILLING
VENISON BACKSTRAP
TO MAKING SQUIRREL
STEW AND WILD
TURKEY JERKY, THIS
STYLE OF KITCHEN
DOES EVERYTHING
BUT HUNT THE FOOD
FOR YOU!"



GETTING STARTED

Maple was the wood of choice for this build as it grows relatively straight, and even though it's a hardwood it is pretty easy to work with when it's green. The tools used to build this kitchen setup consisted of a small shovel, folding saw, axe, knife, and about half a roll of bankline. It's important to note, however, that the majority of structures within this kitchen can be improvised to require even fewer man-made tools. By utilizing "Y sticks" and natural cordage it's not too hard to imagine using only a knife to produce a scaled down kitchen that is more primitive, yet just as practical.

FROM THE GROUND UP

Digging a fire pit is a good place to start. The size of the pit is strictly a personal preference. This pit is a slight oval shape. It

[ABOVE, TOP] Once a shady and relatively flat area was selected, construction began with the digging of the keyhole fire pit.

[ABOVE, BOTTOM] This is a quick setup that will, by itself, satisfy the majority of your cooking needs in the wilderness. To build, hammer tall Y sticks on each side of the fire pit and place a spit or horizontal Y stick across them. The hanger itself is made from three green hook shaped branches. The backsides of these three hooks are shaved flat before they are attached together with cordage, and the end result is an adjustable pot hanger.



[CLOCKWISE] These two different styles of adjustable pot hangers work great as a pair. Keep the lower pot off to the side of the fire pit for boiling water. ● This drying rack rests freely on two maple poles, making it detachable so you can add and remove meat easily. The center sections of the smoke rack are also removable if something needs to be suspended from the tripod. Bark should be removed from the drying rack before use. ● This small toggle hangs directly from the tripod. It serves as both a cooling rack and a place to hang food overnight out of the reach of any small critters looking for a home-cooked meal. ● A solid tripod has countless uses in the wild. This one was fitted with two horizontal maple poles that serve as the platform for a drying rack and a utensil rack.

measures roughly three feet at its widest point and was dug about a foot deep. These measurements are pretty ideal for a cooking fire as the depth leaves room for a large coal bed, and the width accommodates long sections of deadfall, meaning less processing of fuel wood. This pit features a keyhole on one side into which coals can be raked and a grill placed on top. This allows for a controllable temperature when grilling or frying in cast iron.

On the opposing side of the pit a two-foot deep hole is dug and lined with stones. This will become an earth oven, which is the answer for all wilderness baking needs. Simply heat up the rocks in the main fire pit and roll a base layer of hot rocks into the earth oven, add the food item and then another layer of hot rocks. Finish by adding a generous helping of dirt onto the top layer of rocks. The earth oven is fantastic for making roast, as well as baking fish and birds as the meat



will retain the majority of its natural juices, especially when wrapped in leaves.

POT HANGERS

A simple pot hanger over a campfire can make camp life much more enjoyable and hassle free. This setup features three different pot hangers for your stewing convenience. Multiple pot hangers allow you to cook your soup on one adjustable hanger while a separate hanger acts as a cooling hook and a third boils your drinking water for the night. The primary hanger consists of a tall Y stick hammered securely into the ground on both sides of the main fire pit, with a third Y stick acting as the horizontal across the pit. This combination of Y sticks produces multiple secure settings that will come in handy when cooking meat on a spit over the open flame. The hanging hook itself has two settings which allow the pot to be adjusted to the desired cooking temperature.

The secondary pot hanging system is a simple, practical design consisting of a Y stick placed in the ground near the side of the fire pit with a 5-foot long pole laid across the top. Three upside down Y sticks are then placed at the rear of the pole, each one slightly taller than the previous. This allows for a secondary cooking pot to be used with temperature controls of its own and is great for making coffee or wild teas. The third hanger is simply a piece of cordage suspended from the top of the tripod that passes through the smoke rack and has a small toggle tied to the end. The primary purpose of this toggle is to act as a cooling rack, but it also works well for suspending a pot of stew well out of the reach of those pesky varmints while you're sleeping or away from camp. This toggle could also double as a place to suspend a large piece of meat, such as a deer shoulder for thawing or smoking, by attaching a loop to the meat and hooking it over the toggle.

ROASTING

There are few things more embarrassing to a woodsman than having your buddies out to camp for a cookout and trying to get away with not crafting a proper spit. You throw a chunk of meat on a stick and lay it across the fire and blush as that rabbit instantly rolls to its heaviest side. You simply shrug it off and mumble, "It'll be alright." Before you know it, you're eating squirrel sushi. It's important to take that extra few minutes to make a proper spit before roasting so the meat cooks evenly. Aside from a better tasting meal, this ensures the meat is cooked thoroughly, which is especially important when cooking wild meat.

To make a proper spit, find a green branch that has a Y in one end. Sharpen the end of the branch to a tapered point and wrap a bit of cordage to the other end to prevent unwanted splitting. With your knife, baton two thirds of the way down the branch, or as desired. Slide your food onto the spit, in this case a tasty venison kabob, and use some cordage to securely close the split end of the spit. The Y in the spit will allow for rotation of the spit as desired and the result will be a delicious, evenly cooked piece of meat.

MEAT PRESERVATION

When larger game is harvested in a wilderness situation, the need for preservation arises. Beyond the instant gratification of grilling, stewing, frying, and baking you'll need to consider the long term. Building a



[ABOVE] A connected pit is added to the side of the fire pit and lined with rocks to serve as an earth oven. The channel allows hot rocks to be easily transferred to the oven without the need of a shovel.

[BELOW] A delicious pot of venison stew cooks at the lowest setting of the center pot hanger. Once a solid coal bed is established, coals are raked into the keyhole to heat up the grill.



Cooking in the **Sticks**

The taper end of the spit is split to the two thirds point. Once the venison and vegetables are added, the split end is then wrapped with cordage to keep the ingredients tightly on the spit. The Y in the spit allows the kabob to be rotated while roasting. Cooking temperature and height can be easily adjusted by utilizing the pot hanger. Wild Jerusalem artichokes slowly roast on the grill below.



This sturdy shelf keeps utensils, pots and skillets within arm's reach while cooking.



smoke rack is a fantastic way to turn that pile of meat into bags of tasty jerky. This removable smoke rack rests on two lateral poles lashed to a tripod, which will keep thinly sliced strips of meat away from the direct heat of the fire and allow the smoke to rise through it. The sunlight and breeze will dry the meat slowly, as the smoke repels flies and helps preserve the meat as moisture is removed. There are spices with antimicrobial properties that will also help preserve the meat. Bows of pine or cedar tree can be placed around the tripod to maximize smoke. Use your own judgment when preserving

meat primitively in the wild, and for added caution, reconstitute and thoroughly cook meats dried in this manner.

THE POT HANGER

Keeping your cast iron and other kitchen utensils well maintained and organized will save you a lot of grief and headache in the long run. The horizontals on this tripod are about 7½ feet off the ground and extend a couple of feet beyond the edge of the tripod. Lashing two sections of maple saplings across these horizontal extensions provides a perfect pot hanger. Sticking a split piece of wood through the handle of a skillet or pot will keep them suspended between the two maple saplings and conveniently within arms reach.

IN CONCLUSION

This was a very enjoyable process and only took around 10 hours from start to finish; however, a lot of that time was spent gathering materials. Building any kind of bushcraft structure in the wilderness will allow you to see the endless possibilities in the forest around you, which is a skill that comes in handy in a survival scenario. **ASB**



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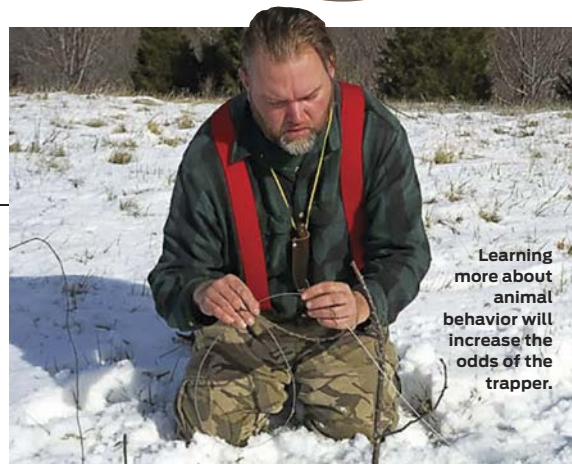
Bear prints are a good warning sign that you're in his vicinity and you should be warned to watch out for bears.

From the Eyes of a Tracker

THE MENTAL GAME OF TRACKING ANIMALS IN THE BACKCOUNTRY

Story and Photography by **Jamie L. Burleigh**

Crouched at the water's edge, with cupped hands quenching my thirst, I noticed a few fresh paw prints in the slick muddy bank. After two days of walking and no sign of human presence, and most likely my second night out in the wild, I decided to give them a closer look. The river was shallow. There were no fish. I had seen activity of animals all around though and it was the only fresh water in the area.



Learning more about animal behavior will increase the odds of the trapper.



1. A wolf at full run. **2.** A well-used game trail. **3.** Bright-colored cord tied on a stick can be used as a tracking aid. **4.** Carving in marks for an intended track. **5.** By simply marking a straight stick or by tying a piece of cordage around it, you can make a very effective tracking tool. **6.** I found these fresh wolf tracks very close to my trapping camp.

The imprints were very crisp. The distinct lobes of the foot pads in every finger and toe were easily recognizable. There were a few prints in clear view on the shore so there had to be more from where it came to drink. I took a small straight branch and measured from the beginning of one track to the next to get a rough estimate of the stride. I was lucky enough that I had two left front paw prints to take an inline measurement, and I broke the stick off at that point. I had seen many of these prints in the past, I was soon in hot pursuit of the bandit of the woods...the raccoon.

I began slowly making my way along his trail. Tracks were less evident, but by slowly placing twigs in the places where there was an apparent game trail and searching within a

few inches of each end of my "tracking stick," I soon found a bent blade of grass or some type of disturbance in the trail that would be some sort of spoor (the track or scent of an animal) left behind from this bandit. The small trail led me under a few logs and some thick brush so I decided it must be used by a smaller animal, or animals, to go to and from feeding from the large hardwood stand through the marshy low area ending at the water's edge.

Soon I found myself among some very large oaks and old hickory trees that had great crevasses and hollows through their gnarly twisted trunks. There were no more grassy trails with soft mud underfoot to easily pick up signs. From where I entered the wooded area to where I stood at the

last spoor, I looked around for the next place a small animal would choose to either enter a den or escape a predatory chase.

A few yards away I saw the remnants of a decaying log. It did not house any grubs as it was pretty much powder at this point, but I did notice the powder had a distinct pathway pounded into and along one side of the stump. Upon further inspection of the nearest downed log I soon saw this powdery residue in the deep fissures of the bark. Moving up the log I saw a sign of my masked friend. A raccoon had left some scat on a flat section of the log. The scat had some seeds and undigested grape skins.

The spoor seemed to be at least a day old to my observations. I figured not only the raccoon would be return-

ing, but so would the other woodland animals to feast on this seasonal food source. I too could eat from the ripened fruit, set traps, and possibly encounter other wildlife here at this prime food source.

The above story was an animated short scenario of why it would be in your best interest to learn about animal behavior and tracking. It is not necessarily used just for the hardcore hunters or trappers. The more we learn about the world and wilderness we live in the better we are at coping with whatever this rock has to throw at us when we are out in the bush!

WHY IS IT IMPORTANT TO LEARN ABOUT TRACKING?

Learning about animals and how to identify them as individuals can tell you exactly what animals are in your camp, area of training or even in your back yard. Taking the time to partake in nature instead of walking through it is very rewarding on many levels. You do not need to know exactly what track was made by what animal, or start dissecting scat piles of the neighbors dog to get started. Simply observe.

To start really observing you have to slow down from a concrete pace to a more natural pace, or you will miss the obvious. Observe what is going on around you. A good tracker not only needs to be tuned in to the signs left by birds, animals and humans, but also learning why that particular spoor was left at the point where you saw it. Take your time. No need to rush any-

thing in the wild, as the animals have no time clocks. But with further learning and observations you will notice a distinct pattern.

The animals do not have time pieces but they do follow seasons, seasonal patterns, weather fronts and shifts, human pressure, non-natural sounds, vehicle traffic and noise, mating rituals, territorial rituals and much more.

BE AN OBSERVER

If you lived within the city limits and never thought about just sitting around in the local park and just "observing nature" while it is happening you really should reconsider. If there isn't a park, sit next to a waterway or where you see birds and small animals feeding or gathering. A city squirrel will most definitely act and react differently than a country squirrel. You could observe what time of day they are active, if they are looking for food or a mate, if they are scurrying and burying their acorns, how they are acting before a storm and more. Even if you do not intend on eating that particular rodent you may learn a storm is brewing and you had better find shelter!

Everything that walks leaves some sort of sign. Even winged animals must land somewhere. It is up to us as experienced trackers to pick up the most intricate details to literally get into the mind of the animal we are tracking.

SPIRIT TRACKER

Aboriginal and some "spirit" trackers are highly tuned to the animals

they encounter. Some would say they use "spiritualistic mumbo-jumbo" but I would simply say that's the wrong term for a very intuitive tracker. They claim to jump in and out of the mind of the intended prey and literally prance, and act out the ways that creature might in that particular situation. For example, the spirit tracker flailing his arms in the air to mimic the movements of the great horned beast he is tracking may seem a bit odd or out of place to the less observant eye, but in reality the tracker placing his arms up and walking through the bush looking for an advancing track may soon notice the animal would never go through that point in the trail due to the thick tangled brush that could catch antlers.

When I saw the "spirit" tracker place his outstretched hands with a few fingers splayed outward and waving back and forth, asking mother Earth to show him the next sign, I dove deeper into what was really happening and I found sticks or branches were at a premium in that locale. So utilizing his arms and outstretched fingers in a sweeping motion in front of him, he was actually focusing all his efforts in seeing exactly what spoor he could find within that specific arm span.

At the time it was just an arm span to me, but to him it was the overall 11 to 12 feet of actual leaping the animal was doing at the time he made that track! A 12-foot tracking stick may have been a bit hard to create, so the "spirit tracker" used what he had at hand, literally, and began his pursuit.



[LEFT TO RIGHT] Female Whitetail Deer generally have loose scat. ● Large animals frequently use this trail as it is dug deep into the earth. ● Bear scat is large and easily noticed, since the bear doesn't try to hide it like other smaller animals.

THE 10 Cs



WHAT TO CARRY INTO THE WOODS?

The topic is a hot one for sure! It really depends on your skillset and how comfortable you wish to be when you are gone. Let's go right into what I take for a simple walk in the woods or a day hike. I prefer to always carry the 10 Cs in a haversack:

- Cutting tool
- Combustion device
- Cover
- Container
- Cordage
- Candle
- Cotton bandanna
- Compass
- Cargo tape
- Canvas repair needle

With the proper training, the above 10 Cs can be used anywhere from the Artic Circle to the jungles of Peru.

Cutting Tool: We advise people to "break up their kit," meaning to make it modular and carry redundant gear in a few different places. If you lose your main pouch or kit all would be lost! I always carry my belt knife on my side. I carry a heavy leather pouch with not only a locking flap, but a drawstring enclosure to ensure I do not lose any gear.

Combustion: The fire kit has a Bic lighter, a large ferro rod, a char tin with charred material in it, a 7x magnifying lens, charred lamp wick and secured with a few cut bicycle inner tubes commonly called "ranger bands." These by themselves are very useful and are another waterproof fire extender.

Alongside the fire kit, I have a few sure-fire materials. This is simply a small material impregnated with an accelerant and dipped in wax to ensure the longevity of the product. It will make fires when needed by simply tearing and exposing the inner fibers of the

product and throwing spark or flame on to it. They will burn for 5-7 min, enough to dry and burn the wettest of small tinder.

Cover: For a cover I have an inexpensive plastic rain poncho. I agree it is not the best option, but for convenience and size of pack I believe if you need to be out of the wind or rain this will suit me just fine. I can fold and make a water container from this, a signaling device or just to stay dry.

Cordage: The cordage I use is 12 feet of #36 bankline rolled into a small coil, and 12 feet of paracord, which has 5 to 7 inner strands, and a repair needle.

Cotton Bandanna: I have quite a bit of room let in the pouch after these needs are met, so I take a cotton bandanna and pack the items in tight so it is unobtrusive

and does not make noise when walking, running or tracking.

The remainder of the room is used for a small camera or cell phone that will be protected by the sturdy leather case. Now that I have a belt knife and many survival and emergency items at hand and available at my side, I also take with me a small pack or haversack.

Container: In this I like to pack for a general walk or trip into the woods. Inside it I have a few redundant items that may be in my belt pouch, but I use these items when I can. I prefer a haversack to carry my items for a day hike or trek. In it I carry a general list of items to always be in there, plus a few trip specific items as well.

- General items for the haversack...
- Folding saw
- **Compass**



- **Headlamp/spare batteries**
- **25ft of bankline, 25ft paracord**
- Cotton bandanna
- Multi tool
- Small fire kit
- 55gal drumliner
- Metal cup
- Small water filter

Inside the haversack I have a separate pouch to carry all of these items so I know exactly where they are placed. As well, I carry any other special items I may need for a specific trip. Like, if I were hunting, I may carry extra shells, or gloves, cell phone, etc. If I leave my home, even if a short trip to town, I carry my haversack in my vehicle, just in case. That is not to say I don't already have a vehicle safety kit in it as well!

DON'T FORGET THE H2O!

Water is life; life is water. I take water everywhere! If it is not in a fancy metal canteen it is in a metal canteen slung on my side! I always go with metal so I can disinfect water by boiling at a moment's notice.

I just recently added a small water filter to my haversack. I think water on the go is essential even if you cannot make a fire to boil! I do not personally like using chemicals or iodine based filters etc. The filter I finally settled with is a go, no go system. You intake all you can until it stops working, then you back flush and continue the process indefinitely.





[LEFT TO RIGHT] Fresh coyote scat shows an abundance of natural food available in the area. ● Erosion caused by an unseen muskrat den. ● Unnatural landings and animal slides make for better understanding of where a trapper should place traps.

As trackers, we become super sleuths of the forest and beyond. The more spoor or signs that we find we document. As we are documenting we try and put it all together, starting from an abstract overall picture to a detailed list of the times and places last traveled by the prey. It can be simple or it can be the most intricate and difficult assignment you will ever have to track a living creature through its own living room without having it recognize you are trying to follow it through its house.

Trackers must be stealthy. Trackers must stay level-headed. Trackers must make better judgment calls that can change like the wind itself while on the track. We must understand the animals, and their behaviors and patterns. We can learn so much from the animals who have been living alongside us since the dawn of mankind.

SO HOW DOES ONE LEARN ABOUT TRACKING?

Be an observer. Look more than you walk. Think more than you do. Docu-

ment as much as you can. Everything and nothing could be spoor. It is up to you and your field notes, observations and better judgment calls for you to put the pieces of your puzzle together just like in the story above.

WHAT TOOLS OR EQUIPMENT DO I NEED TO START?

The tools and equipment are simple and inexpensive. Below is a quick easy list to really begin your tracking adventure training...

- > A good write-in-the-rain notepad and writing instrument
- > Good camera or cell phone with camera
- > A solid multi-tool with a measured graduated scale on one side
- > Rubber bands or some light cordage
- > Clothes suitable for the environment
- > Small wandering kit or pack with sufficient gear to sustain yourself if you got lost or have a woodland emergency

Tracking is much more than just following a few tracks. It is learning about

animals in your area. It includes learning about the natural world where animals live, outside in all seasons, and how they cope and function on a daily basis. Tracking helps you slow down to an animal's pace, and learn how to move with direction and become more observant when you are in the bush. To me, tracking is just a term that encompasses so many techniques that are foundation of becoming a better woodsman and human being. We not only owe it to the animals to learn how they act in their natural surroundings, but how they are reactin to our continuous encroaching human presence. These are some observations and patterning techniques coming from a concerned tracker. **ASG**

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Gear Guide

TACTICAL FLASHLIGHTS

Lighting the Way

Story and Photography by Justin Smith

MANKIND'S FEAR of the dark was squelched in 1898 when Joshua Lionel Cowen, owner of the American Electrical Novelty and Manufacturing Company, came up with an idea for a decorative light fixture for a flower pot that ran on a dry-cell battery. When Conrad Hubert took over the company, he developed the idea and patented the very first flashlight in 1899. After that, Hubert changed the company's name to American Eveready Battery Company. The flashlight was born, so called because the carbon-filament bulbs needed frequent "rests" in order to work properly, therefore, the user could only flash the light briefly.

Choosing a Flashlight

There are a host of variables you'll need to understand in order to properly buy a flashlight that will suit your needs, from the battery size and case material to the bulb type and candlepower. Cheap flash-

lights can be had from any grocery store, but you usually get what you pay for. In order for a flashlight to last you the rest of your life, take care to find one that is made of a robust material, like anodized aluminum, with a common battery type (CR123, AA, or AAA) or rechargeable. Comparing one flashlight to another by lumens alone is misleading; instead, focus on how the light is used. Is it focused in a tight area or diffused over a wide space? Lithium-ion batteries do better in the cold but they cost more, while Cree and Luxeon LEDs are more efficient. Is the reflector textured or smooth? Smooth reflectors have a tight beam while textured ones spread out the beam.

Good flashlights can be expensive, so make sure you understand your basic needs. Perhaps it is better to buy two flashlights for different but specialized purposes than one general all-purpose flashlight. **ASG**



Duty Light Camera

Great for protecting not only your assets but yourself from any legal troubles when you are involved in an altercation. At 12.3 ounces and 7.5-inches long, this 310 (on high) lumen flashlight has a built-in 640 x 480 pixel video camera and 4 to 8 GB of storage, which equates to approximately six hours of record time. It downloads directly to your computer by the supplied USB cable. The flashlight/camera is water and shock resistant, and the flashlight will last approximately 2.5 hours on high. Included is a 120 volt AC and 12-volt vehicle charger.

Source: brite-strike.com
MSRP: \$550 (4GB model)



A. The DLC-200-4-MIL-RC is made from aircraft aluminum with a hard anodized finish.
B. The LED enjoys a 50,000-hour lifespan, while the camera's pin-hole lens allows for a 58-degree viewing area.
C. The internal hard drive can be accessed via this port, while the charging plug can be accessed via a rubber cover opposite the on/off button.

Dark Energy 550A DE-05

With 624 lumens, the Dark Energy 550A is made from 6061 T6 aluminum with aggressive chekering for a better grip. The single button goes through five settings without having to press the button all the way down: on/off, 100 percent power, 40 percent power, reading and strobe. At 5.51 inches long and 4.30 ounces, it uses two CR123A batteries and has a lifespan of 76 minutes on high and almost 64 hours in reading mode.

Source: sogknives.com
MSRP: \$122

A. The black anodized aluminum housing is strong, but the deep checked texture provides a sure grip. **B.** The smooth reflector concentrates the beam to a narrow point, while the crown protects the lens. **C.** The single button allows the user to cycle through five different settings from high to strobe.



Dark Energy 247A DE-02

The 5.1-inch length fits neatly in your hand while providing 263 lumens of light in five settings: on/off, 100 percent, 40 percent, reading and strobe. The two CR123A batteries allow for 171 minutes of use at high and nearly 90 hours in reading mode. The body is made of 6061 T6 aluminum but is Class II anodized for extra strength. It weighs approximately 4.1 ounces.

Source: sogknives.com
MSRP: \$130



A. The five-sides on the main shaft allows for a sure grip, while the heavy textured chekering on the shroud enforces that grip. **B.** The slightly textured reflector focuses a wider beam while providing a bright white light. **C.** The single button is protected by an aluminum ring and allows for quick changing between settings. A slight depressing of the button will flash the light on momentarily.

Böker Plus FA-3

This light features an LED with two modes (twisting the head as if you were to remove the battery causes it to dim). The 8-ounce aluminum body has a slight checkering pattern to resist slippage, while, at 5 inches in length and 1-5/8 inches in diameter, it is hefty for its 459 lumens (155 in low). The lightly textured reflector allows for a wide beam and it runs on four AA batteries (included).

Source: Boker.de/us

MSRP: \$73.95

A. The stout body and heft provides a sense of comfort in carrying this flashlight, but its weight is mostly attributed to the four batteries inside. **B.** The slightly hammered texture of the reflector helps cast a wide beam. **C.** The button only turns the unit on and off, while controlling the high/low setting requires a twist of the head. It comes with a lanyard.

**Böker Plus FC-1**

Like its fatter brother, the aluminum body of the FC-1 has a switch at the end for momentary or constant light. This flashlight features an LED with two modes that can be chosen by a simple half twist of the head. Running on two CR123 batteries (included), it can be set in two modes, high (224 lumens) and low (70 lumens). It is slender and just shy of five inches and 2.3 ounces. It comes with a lanyard and a detachable pocket clip, spare battery o-ring and rubber button cap.

Source: Boker.de/us

MSRP: \$59.95

A. The body of the FC-1 is watertight to an IPX6 rating, meaning it can withstand heavy splashing and rain. **B.** For such a small diameter lens, it provides a wide light pattern. **C.** A very large button ensures confidence when pushing it, though the lanyard's attachment clip frequently gets in the way.



Polysteel 600

For an inexpensive flashlight the Polysteel 600 is designed for durability with a stainless steel core wrapped in a grip textured nylon polymer. With a maximum beam distance of 856 feet, the light can be focused from a very wide diffused beam to a tightly focused one. The button switches the light from three modes: high (579 lumens for 2 hours and 15 minutes), medium (187 lumens for 5 hours and 30 minutes) and low (55 lumens for 13 hours and 45 minutes). At 7.87 inches long and 0.75 pounds, it is rated to IPX8 waterproofing (immersed up to 10 feet).

Source: coastportland.com
MSRP: \$39.99

B. The “bull’s eye” lens shape gives the flashlight a very focused beam, pointing all 579 lumens at a small space. **C.** A downside of this flashlight is the loud clicking noise it makes when switching it on or cycling through the three modes. However, there is ample space for a lanyard.



A. The poly casing over a stainless steel core flashlight is rated and tested to ANSI/FL1 standards and is rated for a three-foot drop test.



HP7R Rechargeable

The Flex Charge Dual Power system allows you to charge using AC, DC or USB power sources and also includes an alkaline battery pack, allowing you to continue using your light, even without access to charging power. A second rechargeable battery pack is included which can be charged outside of the light so you can always have one ready. The beam can reach over 1,000 feet and the button cycles between a high output setting of 201 lumens, a high powered strobe mode, or a low output of 22 lumens. Unique to this flashlight is the slide focus. Merely slide the head's housing back and forth to change the light's beam from spot to flood. It has an aluminum casing that makes the flashlight 5.58 inches long and 7.2 ounces in weight.

Source: coastportland.com
MSRP: \$147.49



A. The body is impact and water resistant and has a diameter of 1.18 inches. **B.** On high, the two lithium ion batteries can last for nearly eight hours. **C.** Similar to Coast's other option here, the button is loud and takes a considerable effort to push it. It is also exposed beyond the cowl, where it could be easily damaged.

T-Max Series

All T-MAX lights feature a powerful white light output of 425 lumens and strobe capability and can be operated in high, medium or low brightness settings with a simple push of the button. A safety beacon can be activated with secondary LED outputs. The crenulated bezel can act as a striking tool. Fully waterproof, the T-Max is made of aluminum and has a unique ergonomic design with its loop feature and mounting options. It weighs only 5.9 ounces and sits a mere 3.4 inches tall.

Source: firstlight-usa.com

MSRP: \$199.00

A. Short and stout, the T-Max's strength is its ability to be mounted in a variety of positions, in addition to being held by the "trigger."
B. The on/off switch merely turns the unit on or off, while the toggle switch (right) goes from low to high and activates the strobe. The arc button at the bottom triggers the maximum light setting. **C.** A coated pocket clip can help the T-Max attach to most anything.

**Cortex**

Running on either three CR123 or two AA batteries, the Cortex can utilize multiple power sources when having options is critical. With a maximum output level of 675 lumens (when running on three CR123 batteries), it can run for approximately 1.75 hours, while the low output is only 30 lumens the charge can last for 40 hours. With AA batteries, the lumens and time is much shorter, with 390 lumens for 1 hour on high and 28 lumens for 15 hours on low. Made of aluminum, it weighs 4.8 ounces and is 6.15 inches long. The bulb is an XML LED, and AA batteries are included (not the CR123).

Source: gerbergear.com

MSRP: \$119.99

A. The Gerber Cortex is made in America with aluminum. **B.** The crown makes for a sturdy striking weapon, while the smooth reflector keeps the LED beam narrow. **C.** The single button activates the high and low but is slightly difficult to push (and you have to push it three times to get to low). The raised cowling protects it from being damaged.



The diminutive version of the Cortex, the Compact fits discreetly in the palm of your hand and runs on a single CR123 or AA battery (included). When powered by a CR123, the Cortex Compact provides 125 lumens of output, enough light to momentarily blind an aggressor's vision. The 4-inch, 2.1-ounce flashlight clips neatly inside pants pockets. Made from aluminum, the body is covered with a hatching that provides a great grip, even when wet.

B. Although the reflector is quite smooth, the beam is considerably wider than expected. However, it is well protected by the encircling crown of aluminum, providing quite a striking surface. **C.** The button sits high from the housing and will probably be easily bumped on by accident, as it only takes a slight amount of pressure to turn it on without actually clicking.



A. This small light packs a punch: 175 lumens from a single CR123 battery, with continuous use ranging at 2 hours.



Constructed from anodized aluminum in matte black, the tempered glass lens is shatterproof with an anti-reflective coating. The case is waterproof to one meter and corrosion resistant, while the LED bulb is rated to last for 50,000 hours. The on/off button is silent and toggles between high, low and strobe easily. At 875 lumens on high, the two CR123 three-volt batteries will last 2 hours and 25 minutes. The package includes a canvas sheath, a pocket clip (attached), a lanyard and the two batteries.

A. The body of the flashlight is 5.6 inches long and it tips the scales at 6.1 ounces. The barrel is one inch in diameter, which is a standard size for a weapon mount. **B.** When on high (875 lumens), the battery power lasts over 2 hours, but when on low (at 43 lumens), they will last 43 hours. The dimpled reflector gives off a wide beam. **C.** The on/off button is virtually silent and protected by a raised the aluminum crown on the body. The square portion ensures the flashlight doesn't roll.

USB Rechargeable

The USB rechargeable LED flashlight with high, low and strobe modes is constructed from anodized aluminum in matte black. It is 6 inches long and weighs 6.4 ounces. The lens is shatter-proof, tempered glass with an anti-reflective coating. The reflector is shot blasted to provide a wide beam, while there are two o-rings that make the flashlight water resistant (IPX4 rating). The nylon sheath fits easily on a belt and features a spare battery compartment. Comes with a rechargeable 18650 battery, AC wall adapter and USB cable for charging.

Source: swflashlights.com

MSRP: \$129.99

A. The diamond pattern knurling offers a sure grip. **B.** The LED will never need replacing. **C.** The button isn't silent like the M&P 12 and you have to cycle through the modes in order to reach low or strobe. However, the button resets after a few seconds, so it will always turn on at the high setting.

**Galaxy Flare**

With nine SMD LEDs in a row this surprisingly efficient pen light is very bright at 270 lumens on high and 60 on low. It is also adjustable. Merely hold down on the pen-cap button and it will dim to however much light you need or want. Two quick clicks and it enters strobe mode. Powered by three included AAA batteries, this very affordable light is 7 inches long and weighs only 4.1 ounces. The pocket clip is magnetic so it can be used hands free and it rotates around the light's shaft. The body is aluminum and water resistant while the LED cover is scratch resistant. This is a very convenient and practical light with a variety of applications.

Source: swflashlights.com

MSRP: \$19.99

A. The nine LEDs are very bright for their size, pumping out 270 lumens from such a small light. The body is aluminum while the lens is scratch resistant. **B.** The button controls on/off, but holding it will dim the light from 270 lumens down to 60. Double click and the light strobes. **C.** The pocket clip is magnetic but also rotates so the light can be positioned in several different directions.

ASB





Firestarters 101

HOW TO MAKE YOUR OWN INEXPENSIVE FIRESTARTERS

Story and Photography by **Larry Schwartz**

Warmth, cooked food, avoiding hypothermia and freezing, signaling for help; being able to start a fire when you need it in any situation is a vital skill in the backcountry, and at home too when the power is out. To ensure you can get one started whenever you need to it is a good idea to have some firestarters with you, either in your backcountry kit, your bug out bag or in a kitchen drawer. I include a firestarter and

lighter in my everyday carry (EDC) gear that I keep in my right front pocket at all times.

To build that fire you need to have three ingredients ready and available: fire, fuel, and oxygen. Not having enough of any one will make it hard for you to successfully make a fire. Your firestarter gives you the fuel in a form that will light easily and burn long enough to get the rest of your fuel burning. In one of the examples below, the firestarter gives you both fuel and fire.

Some firestarters — especially the commercially made ones — need an actual flame from a match or lighter to work, while the most useful ones are designed to work with just a spark. In this article we will cover both kinds. Each firestarter, especially the ones you can make at home, have two parts: something with oil in it like wax or petroleum, and something to serve as a wick like a string or fine cotton-like fibers. The choice of materials helps decide if you need a flame or just a spark.

A YouTube search for “firestarters” reveals dozens of videos that show you a wide array of wax/petroleum products coupled with a variety of different wicks, from string to cotton to cardboard to duct tape. This article will show you some of the more popular methods and the most reliable. So, let’s look at how to do it!

DRYER LINT

The simplest firestarter you can make utilizes dryer lint. The upside is it’s free, easy to get, and lights with just a spark. The downside is it doesn’t burn as long as other firestarters, which typically have some sort of accelerant. Lint also may not generate as much heat as the others, but it is enough to light your tinder.

Materials:

- Dryer lint from your home’s appliance.

How to make it:

- This is really simple. Remove the lint from your clothes dryer.
- Put it in a waterproof container like a snack sized or sandwich sized plastic baggie.

How to use it:

- Place a ball of lint next to or under your fire lay.
- Strike sparks onto the lint, or use a lighter or match to ignite the lint.
- Move the burning lint into your fire lay to ignite the tinder.

COTTON BALLS AND PETROLEUM JELLY

Without a doubt, when I was a young Boy Scout, the rolled cardboard and paraffin firestarter was the most popular style. Today, most likely because it will light with nothing more than a spark, the combination of cotton balls or cotton pads saturated with petroleum jelly is the most popular. It’s easy to make and just as easy to use.

Materials:

- Cotton balls or cotton make-up removal pads (or dryer lint).
- Petroleum jelly, or liquid hand sanitizer that’s petroleum- or alcohol-based

How to make it:

- Scoop some petroleum jelly from the container.
- Work the jelly deep into the cotton ball or pad to saturate it.

The cotton balls are best stored in an empty film container or pill bottle. The pads can be stored in a snack sized plastic baggie, or in something like a small Altoids container.

An alternate method:

- Instead of working the petroleum jelly into the cotton, you can also melt it in a double boiler and soak the cotton ball or pad in it to help the petroleum jelly absorb into the cotton. This will better saturate the cotton and the firestarter will burn much longer. Just be careful as the melted paraffin will be extremely hot and will burn your fingers.

How to use it:

- For both the cotton ball and the cotton pad, pull them apart to expose the cotton fibers so that they are fuzzy, which makes it easier for a spark to ignite the petroleum jelly.
- If you are using a spark, first make a space in your fire lay for your firestarter, then strike some sparks onto the firestarter. Once lit, place the firestarter into your fire lay and gently blow on it, if necessary, to ignite the tinder and kindling.
- If you are using a match or lighter to ignite the firestarter you can use the approach above or place it into your fire lay and light it there.

PARAFFIN AND COTTON

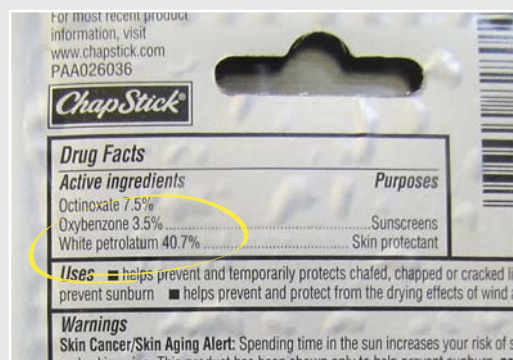
Not as messy, but just as effective, a cotton make-up removal pad soaked in paraffin is another great firestarter that is easy to make and easy to store. It will require an open flame, though, unlike the cotton ball and petroleum jelly which only need a spark to start.

Materials:

- Either cotton make-up removal pads, cotton balls, sawdust, or anything that is fine and will burn.
- Either paraffin, which you can find in a variety of places, or candle stubs from home, or tea candles.



Cut up your candles or block paraffin and melt it in a metal container in a pot of water over a medium or medium-high heat. White wax works fine, but using a colored wax will help you see if your wicking material is fully coated or saturated.



Lip balm, like Chapstick, is high in petroleum, so if you need to make a firestarter in the field you can rub it into some fabric, wood shavings or pine needles and then light it.



Depending on the brand, liquid hand sanitizer is high in alcohol or petroleum, so you can use it as a substitute for petroleum jelly. Keep in mind that it will not burn as hot as the petroleum jelly.

- A metal container, like an empty 20-ounce tin can.
- A pot large enough to hold your metal container.
- Something to stir with.
- Something to remove the cotton pads from the paraffin; pliers, hemostats, clamps, or tongs will work.

How to make it:

- Prepare your paraffin for melting. If you have a block of paraffin you can melt a piece of it, or shred or flake it with a knife to speed the process. If you are using candle stubs or tea candles you should cut them into chunks to ease the melting process, and remember to remove the wicks in the candles before you melt the wax.
- Place your prepared paraffin into your metal container.
- Place the metal container into your pot and add enough water to the pot to bring it up above the level of the paraffin in the metal container.
- Heat the water over medium heat to melt the paraffin.
- As it melts, stir the paraffin periodically to move the solid pieces into the melted paraffin and to eliminate any cool spots.
- Watch the melting paraffin to ensure it does not get too hot or splatter.
- Once it is all melted keep the wax on the heat so it doesn't solidify.
- Pick up a cotton ball or pad in your clamp and set it in the paraffin, making sure it is covered on both sides. Leave it in long enough to soak up the paraffin..
- Remove the cotton ball or pad and place it on some wax paper or plastic wrap to cool and dry.

How to use it:

- Pull apart the cotton ball or cotton pad to expose the inner fibers, which will act as the wick when lit.
- Although sparks may light this if they hit the right location, the best way to light this is with a flame from a match or lighter.
- Once lit, place the firestarter into the fire lay and blow gently to help light the tinder and kindling.

SUPER MATCHES

One of the best firestarters for use in bad weather, especially if it's windy, is



[LEFT] Use your fingers to rub the accelerant (petroleum jelly) into the wicking material (cotton pad), making sure it is completely saturated and covered.

[BELOW, LEFT] Dryer lint will ignite with just a spark from a striker and does not need anything added to it. Although it doesn't burn as hot as something with wax or petroleum jelly, it does burn hot enough to ignite your fine tinder.

[BELOW, RIGHT] The cotton pad with wax in it will burn hot and long. Tear and pick at it to bring up some fuzz to help it light.



When you are ready to use your cotton ball and petroleum jelly firestarter, pull it apart to expose more surface area so it will burn better.



When lit, the cotton ball and petroleum jelly combination will burn hot and long.



[LEFT] Once your wax has melted you can start adding your cotton balls or cotton pads. If using cotton balls do them one at a time to ensure complete saturation. If using the pads, you can put in more than one as long as your wax is deep enough. Leave them in 10-15 seconds to get well saturated.

[MIDDLE] Lay your dipped firestarters out on a piece of aluminum foil or wax paper to cool and dry. Make sure you clean up the kitchen afterwards.

[BOTTOM] You can make your super matches with a single matchstick or with two or three matchsticks, depending on how windy you expect it to be when you need them.



what I call a super match. They are a bit more complicated to make but they put out an amazing amount of flame for several minutes.

Materials:

- Wooden matchsticks, either strike-anywhere matches or strike-on-the-box matches.
- Toilet paper, the fluffier the better.
- Paraffin, as described above.
- Equipment to melt the paraffin, as described above.

How to make it:

- Melt your paraffin as described above.
- Cut the toilet paper squares into strips that are as wide as the matchstick is long from one end to just below the match head. For example, if the distance to just below the match head was 1.5 inches, you would cut the toilet paper squares into strips that were 1.5 inches wide by however long the toilet-paper section is. You can use two or three matches if you want, especially if you anticipate using the firestarter in windy weather which might blow out a single match firestarter.
- Wrap the toilet paper strips around the matchstick.
- Dip the matchstick wrapped in toilet paper into the wax, sealing each end.
- Then put the whole thing in the wax to let it soak into the paper for 15-30 seconds.
- Use your tongs to remove it from the wax and set it aside to cool and dry.

How to use it:

- Clean the wax off of the match head.
- Strike the match and let it ignite the wax covered toilet paper.
- Place the burning firestarter into your fire lay and let it ignite the tinder and kindling. It should burn for several minutes as opposed to a match which only burns for a minute or less.

CONCLUSION

Now that you know the basics behind making your own firestarters, gather the materials and spend an afternoon playing mad scientist and see which ones you like the best and work the best for you. Who knows, you might just come up with the next great firestarter combination. **ASG**



Trial by Fire, Fire by Friction

CREATING FIRE WITH THE BOW AND DRILL Story and Photography by Clint Jivoin

You're huddled in your shelter on a cold wet winter night listening to the wind howl as sleet bounces off the tarp overhead. As you stoke the fire you glance over at your dwindling pile of firewood. You're careful not to let the fire burn too fast. This is the kind of night when you can't help but admire how physically tough the deer must be as they bed down in the cedar thicket just a stone's throw away. You are humbled realizing that without a combination of shelter and fire sleeping would not be an option on a night such as this. This is a night when your buddies choose to stay indoors. You, instead, saw an opportunity for working to perfect your wilderness skills!

You're a seasoned survivalist and you have effectively created a micro climate to regulate your body's core temperature and you'll make it through the night with only your knife, ferro rod and a small tarp.

MAN AND FIRE

Humans have long had a relationship with fire. While it's possible to suffer through the occasional long cold night in a well designed primitive shelter, fire is what separates humans from every other creature in the wilderness. In a survival scenario fire is everything. Once a seasoned woodsman has acquired fire, the scenario becomes just another camping trip. Fire is the flickering light of humanity that keeps the darkness of the forest from swallowing you in the night.

UNDERSTANDING FIRE

The first step to pursuing advanced fire-making skills is to understand the triangle of fire. The triangle consists of heat, fuel and oxygen. These three elements are absolutely essential for ignition. This becomes especially important when making fire primitively as it requires the harnessing of friction to produce an ember. An ember is fire at its most venerable state.

Before attempting a friction fire we must first make sure we have all of the components required for nurturing an ember into a sustainable fire prepped ahead of time by means of a “bird’s nest” and proper kindling. In a true wilderness survival scenario you may only get one shot at making fire! Fire by friction is 90 percent prep work and attention to detail is required.

MATERIAL SELECTION

A bow drill kit is made of four components. These four components when constructed of viable materials and used together with proper technique will produce an ember. The components include a hearth board, spindle, bearing block and the bow. Let’s begin with material selection. The hearth board and spindle can be made of a variety of different materials. While materials such as yucca and basswood will produce an ember with relative ease, these premium resources may not always be available.

It is important we learn to identify the properties of materials that will support combustion as opposed to simply memorizing a few common resources in our area. A true survival scenario is likely to take you beyond your specific bio-region and quite possibly out of the country all together. In such a scenario it won’t help much to know cottonwood supports combustion in Kansas, if you’re not in Kansas anymore so to speak. This selection is most crucial when choosing materials for the hearth board and spindle. Knowing where to look will greatly increase the chances of securing a viable friction fire kit in a timely manner. Oftentimes, we “go to water to find fire” because certain species of trees known to support combustion,



Measuring out a bow drill spindle and hearth board.



A split hearth board.



A carved bow drill spindle that is pointed on top to prevent friction and round on bottom to promote friction.



A divot is carved into the hearth board for the bottom of the spindle to rest in during the burning in process.



A divot is also carved into the hardwood bearing block for the pointy top of the spindle to be placed into.

Fire by Friction



This bow is made of an Asian honeysuckle tree. The branches of this shrub grow with a natural bend and are very lightweight once dried, making them ideal.



The bark of a cedar tree makes excellent bird's nest materials, even in wet weather.



This is what a processed bird's nest should look like. Processing the cedar bark not only exposes more surface area, but also will allow the bird's nest to dry as you prep your kit.

such as cottonwood and basswood, tend to grow on river banks or in the outlying wetland areas.

Easy to identify from its conical growth pattern and "tulip" shaped leaves, the yellow or "tulip" poplar has a tendency to drop its long and often straight branches so they hang in the breeze and dry sufficiently. It is a soft wood, and an easy way to tell if a questionable material is soft enough to support combustion is to simply press your thumbnail into it. If a visible nail mark is left in the material, then you likely have a material that will sup-

port combustion as long as it's not too damp and too rotted. It is important to note dry wood is preferred, if not necessary, when making fire by friction.

CARVING THE SPINDLE

There is a lot of personal preference involved when crafting a bow drill kit and the spindle is no exception. A good baseline is to begin with a spindle measuring the length of thumb to pinky at full spread plus an additional two inches and a diameter of the thumb itself. Smaller youths may require a shorter spindle so they can

fully exert the downward pressure required to reach ignition. Keep in mind the spindle will inevitably shorten as it wears against the hearth board and bearing block.

The top of the spindle should resemble a dull pencil so it limits the friction against the bearing block. As the spindle wears "shouldering" becomes an issue. This is where the spindle wears so the top of the spindle is too wide for the bearing block. To prevent this, the top of the spindle should be touched up after every attempt. Rounding the shoulder of the



It is very important to keep the wrist braced tightly against the shin when drilling. If this brace is weak the spindle will have a tendency to shoot off to the side. This can be very frustrating for beginners.

pointed spindle top can limit shouldering to some extent. The bottom of the spindle should resemble a hot dog. This promotes maximum friction between the spindle and heart board while drilling. Like the top of the spindle, the bottom of the spindle will also wear and require regular maintenance.

When touching up the bottom of your spindle between attempts be careful to not remove the charred portions from the main area of contact as this will only require re-charring before ignition is possible.

THE HEARTH BOARD

The hearth board is the portion of the kit that rests on the ground when drilling. Downward pressure and speed are applied to the spindle via the bow and bearing block as it is drilled into the hearth board to generate dust and eventually enough heat to ignite that dust into an ember. To produce a flat hearth board from a round piece of wood, use a knife or baton at the one third points on either side of the block of wood. A hearth board should be roughly three quarters of an inch thick and flat on both sides. A divot is

carved on top of the hearth board so the bottom of the spindle is held in place during the “burning in” process.

THE BEARING BLOCK

The “bearing block” rests atop the spindle and is used to apply downward pressure, driving the spindle into the hearth board to create heat and dust. Hardwoods are most suitable for the crafting of bearing blocks as the friction and wearing needs to be focused into the hearth board, which is the softer of the two. Osage, oak and hickory all make suitable bearing blocks.

To craft a bearing block from a round piece of wood, cut a length that fits well in your hand and split one third of it off. Carve a pronounced divot into the flat side of the bearing block so it will mate with the pointy top of the spindle.

THE BOW

The bow is simply a bowed branch strung with a length of cordage which the spindle is then strung into. Personal preference also plays a big part in bow length, weight and shape. A longer bow promotes a longer pass.



A notched hearth board. The notch gives the hot dust an area to collect and clump together. Once the dust is brought up to temp, it will ignite to form an ember.



An ember formed in the notch. This ember will smolder for some time. Use a knife or tap the hearth board with the spindle to remove the ember from the notch before transferring to the bird's nest.



The spindle and hearth board freshly charred after being burnt in.

Fire by Friction



The ember is tucked into the center of the bird's nest and is then gradually fed increasing levels of oxygen until the bird's nest ignites. **[ABOVE, RIGHT]** An ignited nest ready to be placed into a fire lay. Keep in mind fire likes to climb. Rotating the nest upside down in damp conditions will allow it to further dry as it is placed into the fire lay.

The length of the pass directly dictates the amount of rotations the spindle will have during each pass. A longer bow means fewer passes and, in turn, less exertion. The curve of a bow will also affect the true length of each draw. A slight curve will slightly extend the length the spindle may pass along the bow string with each pass.

For starters, gather a branch with a slight natural bend measuring from armpit to finger tip. A sturdy light-weight branch is ideal, although a slight flex will help to grip the spindle with a little extra tension, which is sometimes preferred. When possible find a branch with a natural Y on one end and carve a “number 7 notch” in the reverse end to prevent cordage from slipping.

BURNING IN

Once the bow drill kit is carved, it's time to burn it in. This process will char and “mate” the spindle to the hearth board. For a right handed person, place the hearth board on a flat and dry piece of land and lay your left foot across the hearth board securing it. Wrap the spindle in the string of the bow by pressing it into the string pointed side up and rotating the top of the spindle over the string until the string loops around the spindle.

With the bearing block in your left hand, place the rounded end of the

spindle into the divot in the hearth board and cap the spindle with the bearing block. With your wrist secured tightly against your shin make slow and full passes with the bow, gradually increasing speed and downward pressure until the hearth board begins to smoke. At this point, continue bowing for five to ten more seconds until you hear and feel a change in the wood itself.

You should feel the kit mate together, it will sound like sand paper and there will be less resistance with each passing of the bow. If successful, the bottom of the spindle as well as the divot in the hearth board should be charred. At this point, you're ready to carve the notch. With your knife or saw, carve a triangular notch into the burnt divot of the hearth board. The notch should extend to just shy of the center of the divot.

GOING FOR THE EMBER

Set up exactly the same as you did to burn in the kit. Think of the burning-in process as a checkpoint as you're already half way there! Place a green leaf or piece of bark underneath the notch to collect the ember once it has formed. Allow yourself to relax.

While obtaining an ember will require a certain level of exertion, if you've taken the time to select and craft a proper kit, the majority of the

work has already been completed. Begin with slow full passes of the bow and gradually increase speed and downward pressure while concentrating on your breathing.

The downward pressure will produce dust and the speed will raise the temperature of the dust until ignition is achieved. You will develop a sort of sixth sense with friction fire over time. This will allow you to make an educated guess of when an ember is obtained. Until then, watch for the pile of dust to begin to smoke on its own. This is a promising sign an ember has formed.

EMBER TO FLAME

Once you've achieved an ember, allow yourself to breathe and recover. Even in humid conditions, an established ember should smolder for upward of five minutes. Bring the bird's nest to the ember, place the ember into the nest, and sandwich the ember into the center of the bundle. Bring the bundle out in front of your face and begin to blow directly into the bundle being careful not to blow too hard as this could extinguish the ember or even blow it through the bundle. Manipulate the fuel and oxygen flow by squeezing and releasing the bird's nest with your hands. The more smoke you see the more oxygen you can then give, eventually achieving open flame. **ASG**

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Gear Guide

OINTMENT



PHOTO BY THINKSTOCK

Outdoor Protective Ointments

WHEN PURCHASING OUTDOOR SURVIVAL SUPPLIES, most people initially stock the big-four basic necessities: food, water, shelter and fire-making tools. After that many will think of camping tools, communication devices, signaling tools and first aid kits. However, one category is often overlooked... skin protecting outdoor ointments.

Sunburn protection, insect repellents, lip balm and others are all very important items to stock in your survival bag. Facing hardships under emergency situations do not need to be compounded by annoying and possibly harmful skin irritations, sunburn or insect bites prone to infection if no proper medical services can be found.

Avoid a problem before it manifests itself with prevention. Spray the sun block, rub the lip balm or coat yourself in repellent and take one less worry of your list and be able to face the unexpected without irritation!



Ben's 100% Insect Repellent

Fight back against the biting insects that can make a bad situation much worse. When under survival situations, the last thing you need is to deal with the annoyance of mosquitoes, ticks, chiggers, fleas and other creepy crawlers found nearly everywhere. Aside from the irritating bites, diseases like West Nile Virus, Lyme Disease and malaria could be ultimately passed to you. Ben's Insect repellent, however, offers a good defense by creating an invisible shield between you and nature's worst pests. This repellent works for up to 10 full hours and contains 95 percent DEET for effectiveness when and where you need it. Never, ever be stuck out in the woods without it. A seldom overlooked survival item yet an immensely valuable addition to any deep woods or outdoor kit.

Specifications:

- 10-hour protection
- Convenient spray bottle
- 95% DEET

Source: Budk.com

MSRP: \$5.99

Burn Cream MD

Even a minor burn sustained out in the wild can become a very bothersome distraction if not treated properly, and the Burn Cream M.D. can do just that. This cream provides immediate pain relief using the highest percentage of Lidocaine (four percent) available without a prescription. It blocks the stinging pain and allows you to function normally while under survival or emergency conditions. Formulated with Aloe Vera, Chamomile, Arnica Montana and Vitamin E, Burn Cream M.D. optimizes the healing process and speeds recovery time. Its formula minimizes scarring by decreasing inflammation.

Specifications:

- Immediate pain relief
- Speeds healing
- Helps reduce scarring

Source: BurnCreamMD.com

MSRP: \$24.99





Malibu Aloe Vera Gel Spray

Trekking under the hot sun all day can leave your skin burned and stinging; definitely not an enjoyable way to take in the outdoors. Enjoy quick and soothing relief with Malibu's Aloe Vera After Sun Spray Gel. This gel is formulated to be non-greasy after each application and has added moisturizers to keep your skin from drying out and peeling after a burn. A few quick sprays and you will experience cooling and soothing of your skin enabling you to enjoy your day out under the sunshine rather than regretting it. Its easy-to-apply spray can was designed to coat evenly using a 360-degree application process, so every inch of your scorched skin will find relief.

Specifications:

- 360-degree application
- Non-greasy
- Soothing formula

Source: MalibuSun.com
MSRP: \$13.60

Natrapel 8-Hour Insect Repellent Wipes

Insect bites can ruin most outdoor activities. Hours upon hours can be spent swatting or waving off insects looking for a meal on your exposed skin. The Natrapel DEET-free insect repellent wipes provide a full eight hours of protection against nature's biting pests. It uses a 20-percent Picaridin formula, which has been clinically proven to show equal or better performance than DEET. What's better is that Natrapel is completely safe on all your valuable gear and will not melt jackets, fishing line or other synthetic materials. Each box contains 12 individually wrapped wipes, which allows you to control the amount and the location of repellent to apply. Ideal for hikers, campers, backpackers, hunters, fisherman or anyone needing relief from ticks, mosquitoes and most other biting insects.

Specifications:

- DEET-free formula
- Full 8-hour protection
- Easy-to-apply wipes

Source:

AdventureMedicalKits.com
MSRP: \$5.99



Travel Lite His Carry-on Wipe Combo

Easy-to-carry pouches containing easy-to-use essential wipes for men? Contained within the convenient, portable carry bag are all the necessary outdoor and personal products for men in simple one-time-use disposable wipes. Use the DEET-free insect repellent to keep mosquitoes and biting flies away. Apply the antibacterial wipes to any cuts or scrapes to prevent infection, which can become much worse if left untreated and medical help is far away. Biodegradable and compostable, Travel Lite wipes will not harm the environment upon disposal.

Specifications:

- No spills, no leaks
- Biodegradable
- Men-specific products

Source:

Wipes123.com
MSRP: \$19.99





After Sting Jellyfish Sting Relief

Ocean-based survival has unique dangers not found in any other environment on the planet. Once such danger is jellyfish stings. Like thousands of tiny needles piercing your skin, a jellyfish sting can cause unbearable burning, swelling, and itching of the affected area. After Sting Jellyfish Sting Relief can stop the painful sensations upon contact and allow you to get on with more important tasks at hand. Unlike benzocaine sting relieving products that wear off in only a matter of minutes, After Sting uses a baking soda formula that eliminates the sting and irritating itch for good.

Specifications:

- Instant relief
- Baking soda formula
- Reduces swelling

Source: AdventureMedicalKits.com
MSRP: \$4.25



Outdoor Hands Poison Ivy Scrub

A relaxing time outdoors can be quickly cut short when you are exposed to poison ivy or poison oak. The unbearable itching, pain and swelling can turn your outdoor time into a living nightmare. Avoid this by using Outdoor Hands' poison ivy scrub. This exfoliating cleanser was designed to remove urushiol, the source of allergic reactions found in poison ivy, oak and poison sumac. Use immediately after outdoor activities to limit a potential outbreak. Perfect for use by anyone when camping, hiking, canoeing, picnicking, climbing or any other outdoor activity in which you may be exposed to any itch-causing plants.

Specifications:

- Instant relief
- Gentle exfoliating formula
- Limits potential outbreaks

Source: OutdoorHands.com
MSRP: \$12.00

Outdoor Hands Skin Therapy Cream

Developed by a clinical pharmacist, Outdoor Hands Intense Skin Therapy Cream is your answer to cracked, rough skin caused by exposure to nature's full fury. Extreme weather conditions when under outdoor survival situations can "beat up" your hands to the point of harmful cracking and peeling of the skin. This healing cream can ease the pain while repairing the irritating rough skin. It contains an effective blend of organic oils and botanical extracts that correct the damage while moisturizing at the same time. Because it contains no mineral oils or petroleum ingredients, the cream is absorbed quickly and without any greasy residue.

Specifications:

- Relieves cracked skin
- No greasy residue
- Easily absorbed into skin

Source: OutdoorHands.com
MSRP: \$10.00





BioUD Insect Repellent Pen

BioUD repels blood-thirsty mosquitoes and ticks so you can enjoy the outdoors without the constant itching and scratching caused by nature's irritating pests. Its DEET-free formula keeps mosquitoes away for up to 4-1/2 hours and dangerous disease carrying ticks for nearly two full hours. Continue to apply this protective spray throughout the day for a long lasting shield against diseases caused by bites, including West Nile Virus, Lyme Disease and Rocky Mountain Spotted Fever. For added protection apply directly to clothing. Easy to carry pocket size allows for fast application outdoors and on the move.

Specifications:

- DEET-Free
- Repels ticks & mosquitoes
- Protects for hours

Source: Homs.com
MSRP: \$3.60



BioUD Clothing and Gear Insect Repellent

Spraying insect repellent on your skin when outdoors is great. But what about your clothing and supplies? Flying biting insects and ground dwelling ticks can easily crawl or land onto your gear and travel with you until they can find an unprotected area of skin. Using BioUD clothing and gear repellent can solve that very problem. It uses a powerful, yet DEET-free, repellent which sends mosquitoes and ticks away before they have a chance to take a bite of your skin. A few pumps is all it takes to apply an even coat of protection that will last for hours depending upon which type of insect you encounter. Avoid an irritating, itching bite and worse yet, a possible insect transmitted disease that can take you down and out for a few days or even several weeks.

Specifications:

- Apply to clothing
- DEET-free
- Easy application pump spray

Source: Homs.com
MSRP: \$8.95

Logic Product Group InsectLogic Bug Repel Gel

Looking for insect repellent? This natural insect repellent is formulated using 100 percent plant-based oils and botanicals which repel pesky biting pests, while moisturizing and soothing your skin. This gel is effective against all the common bugs of the world, including fleas, ticks, mosquitoes and biting black flies. Easy to apply, DEET-free, and non-staining formula makes this insect repel gel perfect for those that want to take a more natural approach to direct skin application repellents. Its citrus scent replaces the harsh chemical smell like some other products have and its easy to use large mouth jar allows for easy and complete application.

Specifications:

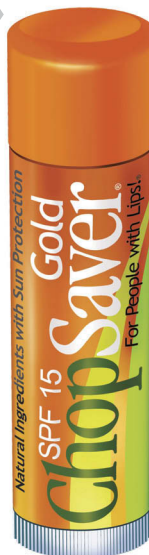
- 100% plant-based oils
- DEET-free
- Non-staining

Source: LogicProductGroup.com
MSRP: \$15.30



Chopsaver Gold

This soothing lip balm contains only all-natural ingredients, including proven healing herbs, like arnica, calendula, comfrey and white willow. These provide much needed natural oils and moisturizers for delicate skin. Soothing emollients, such as shea butter, mango butter, avocado oil, apricot oil, aloe and vitamin E also are infused in this balm. The Chopsaver Gold formula also includes two FDA approved sunscreens to protect your lips from the intense sunshine.



Specifications:

- 100% all-natural
- Two FDA approved sunscreens
- Herbal formula

Source: ChopSaver.com
MSRP: \$13.35



Straight to the Point

HOW TO FASHION AN EFFECTIVE SURVIVAL SPEAR

Story and Photography by **Clint Jivoin**

If there is one aspect of wilderness survival that we tend to fixate on most, it's food, specifically meat. This often brings to mind the iconic image of a lone caveman on the hunt, typically in a dark jungle determined to effortlessly spear the first large animal that crosses his path. Emerging from this hunt relatively unscathed, he then drags the carcass of this kill back to his cave whilst wearing the brand new hide he's acquired. Once back at his lair he rubs two sticks together, producing a fire to slowly roast his well deserved survival feast. If only primitive hunting and foraging could be this easy and carefree.

THE HARD TRUTH

The reality is food is not a priority in a short term survival scenario. If you do happen to find yourself in a longer term scenario, food will then become a necessity as your blood sugar levels drop and your body begins to slowly consume itself. This is often referred to as "the hump" and when combined with the almost guaranteed lack of sleep and dehydration experienced at the beginning of many scenarios it can be a steady downhill struggle leading to low levels of energy and even irrational thinking. At this point we have to think logically.

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Location: Uber's Lock & Gun • Pensacola, FL

Photographer: Miller Hawkins

Model: Hannah Kate

Manufacturer: UltraHoldings LLC

In a real life survival scenario there's no medical team standing by with a satellite phone to call in the rescue chopper if you get bit, stung, or trampled. A person in this scenario is solely responsible for his or her own well being. This means that romantic as it may seem to take on that herd of elk with your little pointy survival stick, it will likely not end well for you.

THINK SMALL

When on the hunt for food, we must always weigh risk verse reward. This risk can be presented by the intended prey itself, such as in the case venomous snakes, or any other wild animal that kicks, claws, or bites back. However this risk can also be caloric, by which a substantial amount of calories are exerted in order to collect food or hunt animals that may contain very little nutritional or caloric value. With this in mind one strategy is to go after harmless and readily available food sources such as crabs, frogs, fish etc. It doesn't take long to get those small numbers to add up to a big number once you get the hang of it.

The most effective long term solution to the calorie game is setting primitive traps...lots and lots of primitive traps! Once enough traps are properly set, they should over time produce meat sources with very little exertion. However, in addition to a trap line, some sort of small game hunting tool should be made to take advantage of any easy kill opportunities you might stumble upon. Being an opportunistic hunter allows the lost survivor to go about their daily business of collecting water, gathering firewood, shelter maintenance, and checking traps all while being ready for potential food sources as they present themselves.

A multifunctional gig and spear combination is ideal for this as it is quick and easy to make, provided you have a blade. This hunting tool will consist of a two sided spear. One side features a four point gig which is ideal for the majority of small game as it allows you to not only pierce, but also pin animals down so that they can be quickly and humanely dispatched or kept as live food for later. The other



Maple is a very abundant hardwood in the eastern woodlands. Maple saplings typically grow relatively straight with very few branches which make it an ideal wood for making spears and shelter building.



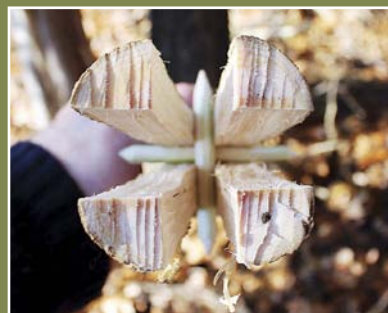
A quick wrap of bank line ensures the shaft of the spear won't split out. If cordage is readily available this wrap may stay permanently fixed to the shaft for added longevity.



This 6½ foot spear is too tall to be safely split on end. Butting the opposing end against this tree with the blade facing away limits the risk of injury.



It's important to take your time when splitting your spear. If you find your blade wanting to veer off to one side apply pressure to the knife handle to force the split back on track.



Two maple pegs are pressed into place to allow for easier sharpening of the points. Once all four points are sharpened these pegs can be adjusted up and down until the desired spread of the points is achieved.



A sharpened gig point ready to be fire hardened.



Fire hardening the gig point over a small fire.



The finished gig point fire hardened and ready for action.



A series of quick lashings ensures the pegs stay in place and prevents the shaft of the spear from splitting out during impact.



The reverse side of the spear is carved into one stout sharp point and then fire hardened for self defense and quick dispatching of trapped animals.

"FROM THIS SAPLING CUT YOUR SPEAR POLE A FEW INCHES TALLER THAN YOU STAND. THIS WILL KEEP THE SHARPENED POINTS OF THE SPEAR WELL ABOVE EYE LEVEL JUST IN CASE YOU TAKE A FALL WHILE TREKKING THROUGH THE FOREST."

end of this hunting tool features a single sharpened point for self defense or dispatching a larger animal that may get caught in a trap.

MATERIALS NEEDED

Begin by selecting a straight green sapling that measures 1 to 1½ inches in diameter. If possible, select a hardwood variety such as maple, oak, or hickory as this will add to point durability and the overall longevity of the spear. From this sapling cut your spear pole a few inches taller than you stand. This will keep the sharpened points of the spear well above eye level just in case you take a fall while trekking through the forest. While you're at it, go ahead and collect two wooden pegs about 3 inches in length and the diameter of a pencil.

Usually these pegs can come directly from the sapling you've harvested for your spear pole. You'll also need a 3- or 4-foot section of strong cordage. Paracord or bankline are the most desirable; however any strong vine or other natural fibers will work just fine.

CONSTRUCTING THE SPEAR

Wrap your cordage around the spear pole about a foot down from the thicker of the two ends. This will keep the pole from splitting out too far while you baton. Place the thinner end of the spear securely up against the base of a tree or boulder and with your knife baton 10 inches straight down through the middle of the pole. Retrieve your knife, rotate the spear 90 degrees, and repeat the batoning process. At this point slide the two wooden pegs that you cut earlier in between the splits you've just made so that they cross each other. This will spread the four sections of your gig apart so that you can get your knife in between to sharpen them into points.

Once the points of your gig are sharpening, remove the cordage that

you previously wrapped around the shaft so that it does burn during the fire hardening process. Fire hardening is an ancient technique for speed drying green wood. This can be achieved either by way of jamming the points of the gig below the coals of a hot fire or by slowly rotating the points just above the flames of a fire. This process will typically take 10 to 15 minutes, however you should use your own judgment. Once the points of the gig are fire hardened they will often times be a slightly different color and carving into them will require a lot more exertion than previously. Be careful not to burn your gig during this process.

Once you are satisfied the points of your gig have been fully hardened, perform a final sharpening and remove any leftover bark from the points. At this point you'll want to lash the wooden pegs to the shaft of the spear. This will help to prevent the spear from splitting out during impact. With one end of your cordage make a loop and press it against the shaft of the spear near the pegs. With the working end of cordage begin to wrap the spear over top of the loop you've created making sure to leave a two or three inch tail.

There is no specific way the spear must be wrapped but make sure to wrap both under and above the pegs. Before the cordage runs out, slide the working end of the cordage through the loop you created earlier and give a stout tug on the tail end. If done correctly this will cinch the pegs up nicely with the spear and prevent any further splitting from occurring.

With the gig end of your spear completed you can then switch gears and begin work on the much simpler spear point. You may choose a simple yet durable rounded spear point or for a little extra penetration, a more traditional spear point shape. Just be sure to repeat the same fire hardening for this end of the spear as well. **ASG**

Secret Garden of Survival

HOW TO GROW A CAMOUFLAGED
FOOD FOREST Story and Photography by **Rick Austin**

Let's say you survive the end of the world as we know it... and let's say you survive for a year. What are you and your family (and your livestock) going to eat when your food stores run out? How will you replenish a year's worth of food storage and then feed yourself and your family each and every year after that? And how do you keep others from stealing it?

Look at the two photos at the beginning of this article. Which one of these is a garden? Which one produces more food? Which one will the unprepared hordes attack? Actually, they are both gardens, but the one on the top produces five times more food per square foot than the traditional row garden on the right. Furthermore, the one on the left only has to be planted once in a lifetime, provides food for 30 years; never has to



be weeded, never needs fertilizer and never needs pesticide, ever. And it is disguised to look like overgrown underbrush, so nobody knows you have food growing there.

WHAT IS THE SECRET GARDEN OF SURVIVAL?

In the Secret Garden of Survival we let nature do what nature does best...the way nature has grown plants for millions of years. – The Secret Garden of Survival™ uses what some have called “Permaculture” (or “permanent agriculture”), but it does so on a larger scale and in a more natural way, using what I have termed, NatureCulture™.

The beauty of this for a prepper is that you only have to plant once and a then you harvest for a lifetime. In the Secret Garden of Survival, we use “companion planting,” where you put plants together that have a symbiotic relationship — a relationship where each plant supports and benefits from the other.

We use plants to naturally attract “good bugs” that will pollinate your plants and that will also prey on and kill the “bad bugs” that you don’t want in your garden. We also use plants to keep away four legged pests too. For example, if you plant onions around the base of a fruit tree, mice won’t go near the tree in the winter and girdle it. Likewise, if you plant daffodils around the drip line of a tree, deer won’t go near it.

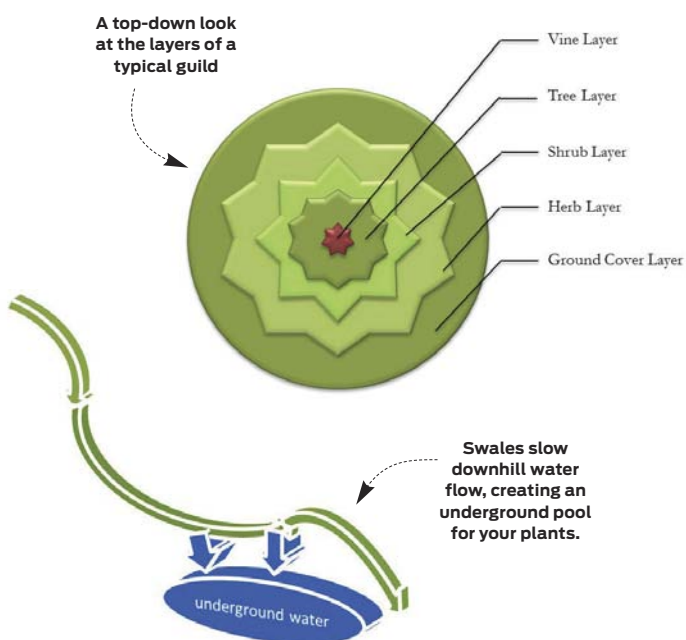
PLANTING OF GUILDS

We plant in “guilds” instead of rows. Guilds are like a mini ecosystem of concentric circles of symbiotic plants planted around the central tree of the guild, such as a fruit or a nut tree. This tall tree ends up producing a canopy of leaves, and shade loving plants grow under the tree. Then outside the shade, shrubs (such as blueberries or blackberries) are planted around your tree in full sun. Then herbs are planted around your shrubs, and then ground cover is planted around your herbs. Since vines naturally grow on trees (there are no trellises in nature), a vine layer (like grapes) grows up your central fruit or nut tree.

We grow plants in three dimensions, so you can put more plants in the same area, which will significantly increase the amount of food you produce per square foot of garden space. In fact, you can grow five times more food per square foot in this type of garden than you could in a traditional row garden.



Author Rick Austin deep in his secret garden.





LESS IS MORE

Not only can you grow more plants in less space, but the individual plants grow better this way too! Amazingly, the grape vines that we planted next to, and have growing on, our fruit trees, have always produced far more grapes than those vines we planted on traditional vineyard trellises. This type of garden looks wild and overgrown, and just like the art of camouflage, it all blends in because it has no definable shapes or rows. It looks “natural” rather than man-made.

WHAT THE SECRET GARDEN OF SURVIVAL IS NOT...

It's not work because once you are finished with your initial planting, all you do is harvest, year after year.

It's not weeding. In this garden, you don't have to pull weeds because, for the most part, weeds are good. Weeds are just misunderstood plants. Weeds are “pioneer” plants, because they are generally the first plants to inhabit a new area. As such, they serve a purpose. Weeds will grow where other plants could not survive, and in the meantime, their roots break up hard packed soil so that water, microorganisms and other nutrients can move in. Additionally, when the weeds die, they create compost and mulch that will help other plants to be able to take over where they left off.

In this close up photo of our Secret Garden of Survival, there are bush beans, cucumbers, peanuts, passion fruit, comfrey, mint, mountain mint, clover and oats- all growing in the same space. And all of this is underneath a pear tree that stands next to blueberry bushes. (Can you find them all?)

“NATURE HAS ITS OWN WAY OF KEEPING THINGS IN BALANCE. WHEN YOU INTERFERE WITH NATURE'S BALANCE BY USING CHEMICAL PESTICIDES, YOU END UP CREATING AN EVEN BIGGER PROBLEM FOR YOURSELF AND YOUR PLANTS...”

It's not using pesticide. You need to understand this simple fact: 90 percent of all bugs are “good bugs.” Good bugs are beneficial insects that in one way or another are essential to the growth and health of your plants. Unfortunately, most insecticides do not discriminate, so they not only kill the bad bugs you want to eliminate, but they also kill the beneficial insects as well. By killing the good bugs you interrupt the lifecycle of the predator bugs and leave your plants vulnerable to numerous other pests.

Furthermore, once you have killed the predator bugs that were protecting your plants, the “bad bugs” can invade at will, and then your garden suddenly becomes a smorgasbord without anyone there to protect it. Additionally, these pesticides end up in the soil and they can kill the good microorganisms that allow your plants to be able to take up nutrients.

Nature has its own way of keeping things in balance. When you interfere with nature's balance by using chemical pesticides, you end up creating an even bigger problem for yourself and your plants, and you could end up with no crops at all.

Even worse, some of these pesticides are systemic. In other words, once they end up in the soil they can then be absorbed throughout the entire system of your plant. So your plants will then carry these pesticides through their roots, into their stems, into their leaves, and into their pollen, thus killing even more good bugs. And if you can ever get fruit to grow under these conditions, these pesticides will now be inside of the food you are going to eat.

Lastly, where do you think you are going to get pesticide when the grid goes down anyway? When there are no stores, and no transportation, there will be no commercial pesticide available. It is far better to never start using them.

It's not using fertilizer. In nature, plants grow just fine without commercial fertilizer. Yet almost all commercial farming, and most residential gardens, rely on it. The problem is that using commercial fertilizer is a lot like giving your plants addictive drugs...and once they are addicted, they have a hard time living without it. And just like pesticide above, where are you going to get commercial fertilizer after Armageddon?

It's not watering. Once your plants are established, there is little to no need for watering in the Secret Garden of Survival.



That is because the best place to store water for your garden is in the ground. In NatureCulture™, we use swales (berms and terraces) to store water. When water drains down into the terrace, it is stopped from flowing further down-hill by the berm on the terrace. The water then seeps into the ground. A lens shaped pool of water forms under the berm. This water is available to the roots of the plants on the berm.

During droughts, when everyone else's plants were dying, our plants were healthy and green.

FARM SPACE

The Secret Garden of Survival is a garden that takes up very little space, that you only have to plant once in your lifetime, that will provide food for you and your family for the next 30 years; that can grow five times more food per square foot than traditional gardening; and it's a garden that you never have to weed, never have to use fertilizers and never have to use pesticide, ever.

Here is an example of how well it works. In two years we went from red clay to 12-foot-high blackberries, 15-foot fruit trees that were bearing fruit, and a lush green food forest that a passerby could not recognize as a garden. **ASG**



We went from red clay to a lush food forest in just two years.

Fire Lay 101



PICK THE RIGHT FIRE LAY FOR YOUR NEEDS

Story by **Larry Schwartz**

Since the day Prometheus gave the gift of fire to mankind it has been one of our best friends and greatest tools. It provides us with warmth in cold weather, cooks our food, purifies our water, and turns raw ore into molten metal for us to build tools that make our lives easier. Early man had to keep a fire burning for fear that it would go out and he again would be in the cold and dark. But when we discovered the miracle of flint and steel we then had the ability to make fire when we needed it. We didn't have to wait for lightning to strike or to take fire with us.

To make a fire we need three main ingredients: fuel, spark, and air. The fuel must be dry enough to light quickly and burn readily. If it doesn't break with a snap when you

bend it the wood is not dry enough. It must be arranged so the air can get to the flame easily and build a good draft so that the fire builds a good draft. The best way to do this is to leave an opening on the downwind side of your fire lay so that the wind will naturally blow into the fire as it burns. The flame is added to your tinder. Tinder is small, fluffy, burnable material that is natural like dry bark or cattail duff or it can be a homemade or commercially made firestarter as we described elsewhere in this issue. Your fire can come in the form of a lighter, matches, a ferrocerium rod and a knife, a blowtorch, or something as primitive as a piece of flint used with a striker.

The best way to build your fire is to do it like cooking from a recipe. You need to

PHOTOS BY THINKSTOCK

gather all of your materials first, before you actually start building your fire. Then assemble your materials as your fire lay. The last thing is to light your tinder with whatever source of flame you have to get it started. Then move your tinder into your fire lay if it isn't already there and let it light the rest of your wood.

The key to a successful fire lay is to have enough of the different thicknesses of wood to build your fire. You need tinder, followed by kindling, which is then followed by the thicker sticks that actually fuel your roaring blaze.

Tinder should be very dry woody material that is no thin and fluffy. Good examples of tinder are cattail duff, milkweed puffs, dry cedar bark, pine tar or pitch, or pine needles. Whatever you use make sure to break it up to expose its inner fibers and make it fluffy. Your spark needs these fine fibers to start the fire. If you can't find any of these and don't have a firestarter with you can use your knife to shave off fine strips of dry wood. Digging into a dry dead log is another good place to find good tinder.

Kindling is the non-fluffy wood that will actually grow the fire. I like to think of it coming in two sizes. The first size you should use are the actual twigs at the end of a branch and the larger twigs that they grow out from. Moving even closer to the trunk are the next size of kindling, the pieces that are the size of a wooden match up to the size of a wooden pencil.

Actual firewood or fuelwood pieces are the next size up and should be around the thickness of your little finger going up to the size of your wrist in thickness. Add it starting with the smallest diameter pieces moving up to the thumb sized and then wrist sized pieces.

Once you have your fire going with medium sized sticks you can add even thicker wood, or quarter pieces from a tree if you want a fire that large. If you are lucky enough to find a dead tree that has fallen to the ground then you likely have each thickness of wood that you need for your fire. Just start with the twigs at the very end of each branch and work your way towards the trunk getting the increasingly larger pieces you need to build your fire.

THE RIGHT WOOD

A fire gives you two main things; light and heat. If light is your main goal, along with some heat, you want to use softwoods like aspen, poplar, or any of the evergreens.



The tipi fire lay is easy to make, lights quickly and burns fast. It is often the fire used as the starting point for a larger fire built off of it by adding more wood either higher or on its sides.

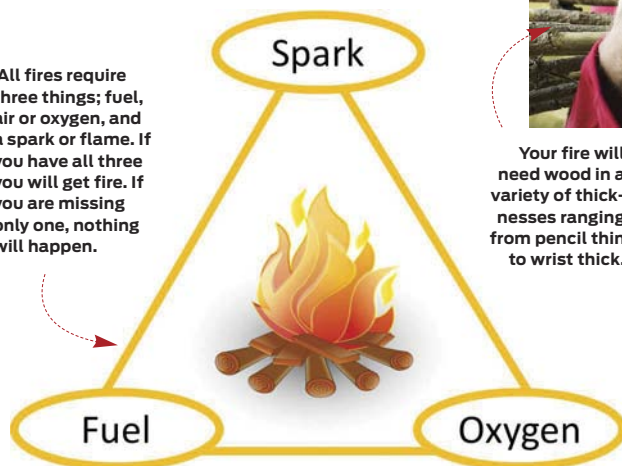


The crisscross layers of kindling are what makes the log cabin fire burn steadily and hot. The layers keep fuel right over the fire which helps it continue burning without having to tend it too often.

[BELOW] The log cabin fire lay is great for building a bed of coals for cooking or other purposes. It can also be used to dry out damp wood by putting it on the higher levels of the log cabin.



All fires require three things; fuel, air or oxygen, and a spark or flame. If you have all three you will get fire. If you are missing only one, nothing will happen.



Your fire will need wood in a variety of thicknesses ranging from pencil thin to wrist thick.



Your tinder needs to be dry, light and fluffy or thin in order for it to take a spark and burn. A wide variety of things can be used from bark to cattail duff to grasses or pine needles.

These are less dense woods so they light faster but they also burn faster so you need to feed more wood into it more frequently. The resin in evergreens also helps it burn and give off more light. If a slower burn or more heat is what you desire then you should be using hardwoods like oak, maple, cherry, or hickory. These are denser woods so although they take more heat to ignite they will give off more heat and will burn longer than the softwoods will.

DIFFERENT DESIGNS FOR DIFFERENT DESIRES

Different types of fire lays are best suited for different purposes.

There are many different ways to lay your fire. Each one has its own benefits for the conditions you are in and the way you will use your fire. The two main lays are the tipi and the log cabin and will meet the majority of your needs.

THE TIPI FIRE: The tipi fire lay is the simplest and probably the one you are most familiar with seeing. It lights quickly and burns quickly, especially if you have good air flow. Starting with softer wood for your kindling will make it easier to catch. You can add harder woods later if you want more heat or want the fire to last longer.

Since this design will focus the heat of the fire directly above it, this is the ideal fire lay when you want to boil water or cook something in a pot suspended above the fire. To build a tipi fire you should assemble your tinder bundle and place it on the ground in the middle of the fire ring you cleared. Next

stick three pencil-sized kindling sticks into the ground to form a tripod over the tinder. This will be used as a framework to hold your kindling. Now you can start adding your kindling, smallest pieces first followed by the slightly larger kindling building the walls of the tipi. Continue this until you have kindling on all sides except for the downwind side. You want to keep an opening on the side where the wind/breeze will be blowing in to give your fire the air (oxygen) it needs to burn. This opening will also give you a place to add your match or fire starter to ignite your tinder.

THE LOG CABIN FIRE: The log cabin fire lay is best used when you want to get a bed of coals for cooking on or for use in making a warm bed of coals to cover with dirt and sleep on. It doesn't concentrate its flame and heat in one place like the tipi fire lay does. It spreads the heat across the cabin framework and burns from the inside out. You can also use this fire lay to help dry out wood that is damp from rain by placing it along the outside of the cabin or on the top layers of the cabin.

To make the fire lay you once again put your tinder bundle in the center of your fire ring. Then place two pieces of your larger firewood, a couple of fingers thick to wrist thick parallel to each other about six to twelve

A ferrocerium rod like this one, coupled with a striker or just your knife will give you a spark that will ignite petroleum-based firestarters or dry and fluffy tinder you find in the field.





If you find a dead tree that has fallen in the woods you have found a treasure trove. If it is dry you have all you need to build your fire from the small twigs at the end of the branches, moving up in size to pencil thick and wrist thick as you move closer to the trunk.

inches apart, depending on how big you want to make your fire. Then put two more pieces across the first two to form a square. This is the foundation of your log cabin. You now want to put a layer of small kindling across your foundation. On top of this layer add slightly thicker kindling. Continue this for a few more layers using thicker pieces each time. If you used thick enough pieces of fuel wood for your foundation you should be able to easily put your match in to light your tinder. If you don't have a match and need to use a spark you can either use two shorter pieces of wood on the downwind end to leave a gap for you to put your lit tinder under the kindling or you can leave an opening in the first layer of kindling on the downwind side to push your tinder in.

SAFETY FIRST, SECOND... AND LAST

As useful as a fire is, it can also be extremely dangerous. An unattended fire can grow outside of its fire ring and burn equipment in the campsite or turn into a forest fire. Sparks from too big of a fire or a poorly placed fire can land on shelters and equipment burning holes both large and small. So, locating and preparing the area around your fire is very important.

Before you start building your fire, or while others are collecting the materials to build the fire you need to pick a good location for it. A good location is one downwind of your camp so the wind won't blow sparks

or flame toward your shelters or equipment. It should be at least ten yards away for safety purposes. For this same reason, you should store your supply of firewood upwind of the fire too.

To prepare the area for the fire you want to clear an area large enough to hold all burnable materials. Then surround the campfire area with non-burnable materials like rocks to serve as a perimeter. You should also avoid crystalline rocks like quartz which can explode if they get too hot due to the moisture inside of them. Next, clear the ground of burnable materials for one or two yards around the fire ring to prevent the fire from spreading away from where you built it through a stray spark.

Now that you have the basics down on how make and use these two basic types of fire lay you can go on and use the variety of other types because they are all based on these two. A search of Google or YouTube on "different fire lays will show you a variety of different types, like the Dakota fire hole designed for use on the plains where there isn't a lot of wood and you don't necessarily want your fire to be seen.

Don't expect reading this article or watching some videos is all you need to do in order to build your first fire when you really need one. Hit the woods this weekend and give each a try to see what the little details are in picking your tinder and kindling that only practical experience will give you. **ASG**

Finished With Your Fire?

After you are finished with your fire, or when you turn in for the night you need to make sure it is completely out with no embers remaining. The easiest way to do this is to stop feeding the fire as the time for bed draws closer. If it has not died down when you are ready to leave it you should spread it out flat to speed it burning out. Then, follow the U.S. Forest Service's guidance for putting out your fire.

- > First, drown the campfire with water!
- > Next, mix the ashes and embers with soil. Scrape all partially-burned sticks and logs to make sure all the hot embers are off them.
- > Stir the embers after they are covered with water and make sure everything is wet.
- > Feel the coals, embers, and any partially-burned wood with your hands. Everything (including the rock fire ring) should be cool to the touch. Feel under the rocks to make sure no embers are underneath.
- > When you think you are done, take an extra minute and add more water.
- > Finally, check the entire campsite for possible sparks or embers, because it only takes one to start a forest fire.
- > Remember...if it is too hot to touch, it is too hot to leave.

DIY Bow & Arrow

HOW TO MAKE YOUR OWN ARCHERY SET IN NATURE

Story and Photography by **Christopher Nyerges** | Additional Photography by Dude McLean

Archery today is a complex sport. The types of bows are numerous, such as the crossbow, recurve and compound. Specialization, competition and much debate occurs with even the smallest components of the modern bow.

Archery is an enjoyable sport and I would encourage readers to learn more about the various archery products on the market and to investigate local archery clubs where you can practice alongside seasoned archers.

The primitive bows of the American Indians may seem like toys by today's standards but they provided the Indians with food and protection. Indians routinely abandoned their rifles to the bow. After all, the bow was familiar as a tool they used all their lives. To operate the bow, all the needed tools and parts came from nature. However, replacement gun parts, the repair know-how, and ammunition were the reasons why they quickly reverted to their bows when guns failed.

A STUDENT OF THE MASTER

I was one of several students of Joe Dabill during our week-long stay in the woods of the Sequoia National Forest. Dabill is a master at the art of bow-making and all of its related skills. He handed each of us a stave he had cut and split a few months earlier. My stave came from a California bay tree. It was nearly five feet long, and my job was to reduce that stave to a functional bow. Dabill's job was to mentor me in each step of the process.



I liked the look of my raw stave and was eager to see it become a bow.

After Dabill explained some of the basics, I clamped my stave to a wooden table, and Dabill carefully looked it over. The stave was over an inch thick in sections, and as much as 2 ½ inches in parts. Dabill took his carpenter's pencil and marked my stave to indicate those sections that should be completely removed. Taking a spoke shave, I began the process of shaving off wood, always from the belly of the bow (the side that faces you when you shoot it), and never from the back.

I spent several hours shaving, though some of those hours were spent resting. Dabill, and his assistant Sig Nubla, would periodically come over and look at my work and make helpful suggestions. (I began to refer to Sig as Dabill's disciple.) As the stave began to look more like a bow, I began to use the Shinto wood rasp, which shaves off lesser amounts of wood. Dabill or Nubla would come by, make a few comments, put some more marks on my soon-to-be bow, and then I'd get back to work.

Sometime during the second day, Nubla looked at my "bow" and told me I was only 20 percent done. Fortunately, he was kidding, as I had done considerably more than 20 percent of the work. I also used a flat rectangular piece of metal to scrape the belly and the sides of the bow. This removed fine slivers of wood and helped to smooth out the surface.

Eventually, Dabill removed the bow from the clamps and filed nocks into each end. I'd already twined a bow string from linen, which I then waxed with beeswax. Dabill strung it, and tested the tiller (how evenly each side of bow bends). He and Nubla then carefully examined the strung and pulled bow like two scientists. They pointed out the still-stiff areas and then Dabill marked those stiff areas for further reduction.

"It's getting there," said Dabill. "A little more and you'll have a bow."

I clamped the bow back to the table and began the careful end-game. I reduced each end a bit, as per Dabill's instructions, and did some careful thinning in certain areas.

After another two hours or so of off-and-on work, Dabill tested the bow's tiller again.

"Looks good," he said and fired a few arrows to a nearby tree stump. "Shoots good," he said with a smile.

I was happy, and Nubla and Dabill did a little more "fine-tuning" so my "finished bow" was now "a really good" bow.



[LEFT] A large portion of the work involved in making a bow is shaving, shaving, shaving. Always remove wood from the belly of the bow and not the back.



[BELOW] Once strung, each arm of the bow must bend equally. Bottom: Bowstrings can be difficult to manufacture from things found in nature, so it is always a good idea to carry some in your survival pack, just in case.



"INDIANS ROUTINELY ABANDONED THEIR RIFLES TO THE BOW. AFTER ALL, THE BOW WAS FAMILIAR AS A TOOL THEY USED ALL THEIR LIVES. TO OPERATE THE BOW, ALL THE NEEDED TOOLS AND PARTS CAME FROM NATURE."



[TOP] To make a bow from scratch, start with a perfectly straight shoot about 3 inches in diameter. **[MIDDLE, LEFT]** Before spending a lot of energy making a bow, test a few smaller branches to find out if they will bend properly. **[MIDDLE, RIGHT]** Willow, ash and California bay are great woods from which to make a bow. **[BOTTOM, LEFT]** Find out which way your stave best bends by giving it a few test pulls. **[BOTTOM, RIGHT]** If the arms are not equal, the arrows will not fly straight.

START WITH A GOOD PIECE OF WOOD

If you're going to make a bow from scratch, you first find a good straight piece of wood. You could select a perfectly straight shoot about 3 inches diameter, or you could cut a much larger tree and then quarter it down for separate staves. This traditional bow is generally not curved when unstrung, and is all made from one piece of wood. It is often called a self bow or a long bow.

I prefer the least amount of work, so I select a straight shoot, about six feet tall. I typically use willow, ash, or California bay because that is what is commonly available to me. I have also purchased red oak boards at Home Depot I carefully selected, but I prefer to make a bow from a shoot I have cut.

Next, I let the wood dry until it is thoroughly dry, which means at least two weeks, but probably longer. Some bowyers advise to cover the ends of the wood with paint or wax to cause the wood to dry slowly and evenly. Sometimes I do this, and sometimes not.

According to Longbow (aka Alton Safford, one of the best old time bow-makers), you should begin with a standing dead limb at least 4½ to 5 feet long, and about 1¼ to 1¾ inches thick. You don't want green wood since it is too heavy and doesn't cast the arrows well. And you don't want downed wood, since it will likely be waterlogged or rotten. Longbow says "you want a piece of wood that is free of knots, checks, bumps and irregularities. A slight bend is okay. You can make a good bow from just about any type of wood, but some are better than others," he points out. "The best bow-making woods are yew, osage, mulberry, black locust, apple, juniper, hickory and ash. But in a survival situation, you use whatever wood is available."

Before you start to work on a particular piece of wood, Longbow suggests you test some of the smaller dead branches from the same tree by bending them to see if they will stand the stress.

You first examine your stave and bend it slightly to see which way it bends. You should be able to determine the natural way to begin carving your bow.

REDUCTION

Your next step is to flatten one side – the side facing you when using the bow. This flat side is called the belly, and all wood is removed from the belly, none (but bark) from the back.

Now, you're ready to get to work. You can hold your stave or you can clamp it onto a

vice or table. And you can use a knife, a small axe, a draw knife, a rasp, a file – and maybe all of these.

“Slowly, carefully, and evenly, cut flat strips down the belly of the bow all the way,” advises Longbow. “As you remove wood from the belly, test the bow periodically by bending it,” he explains. This process can take hours until the bow begins to take shape.

You might use a small axe and big knife at first, but you want to wield it very carefully as you proceed. Remember, you can always shave off more wood, but you cannot put it back on. If you carve too deep, you might ruin what could have been a good bow and you'll have to start over.

The reduction process can take hours, and though everything can be done with one large knife, I strongly recommend beginners get a few of the other tools mentioned here.

THE TILLER

As you reduce more of each “arm” of the bow, you will get to the point where you can test how well your bow-in-progress flexes. You will want to make sure you have an even tiller, which means you want each arm to bend the same. This means you will need to string the bow, and gently pull on it and observe how much each side bends. You want to see equal pull on each side.

One way to observe the tiller is to do the pulling in front of a large mirror. Another way is to have someone watch while you pull it. You can also use a tillering stick which allows you to step back and observe. If the tiller is not even, you continue to carefully and slowly reduce the stiff side until the tiller of both sides is equal.

Once strung, each “arm” must bend equally, or your arrows will not fly straight.

When you are satisfied that your bow is bending evenly, you cut nocks on each end for the bowstring, and you have a bow. Longbow suggests that you always carry good cordage for the bowstring into the woods, since the bowstring can be difficult to manufacture only from wilderness plants.

ARROWS

A good straight arrow that flies straight is the single most important aspect of successfully using a primitive bow. Any bow can be quickly fashioned, but you've got to have straight arrows that fly to their targets. That means you need to know how to make straight arrows, perhaps how to make broadheads (arrowheads) out of stone, metal, or bone, and how to attach feathers to ensure a straight flight.



Some of the simplest Native American arrows were nothing more than hardwood shafts that had a nock on one end and were sharpened to a point at the leading end.

I suggest you practice with commercial arrows at first and then learn to make your own.

Once you learned some of the basics of bow and arrow making you'll discover that it's not difficult to construct them from scratch in the wilderness. After a bit of work, you'll realize why the bow was the one weapon in universal use world-wide. **ASB**

Though shown here working with "convenient" tools, crafting your DIY bow and arrows can be done with little more than a sharp knife.

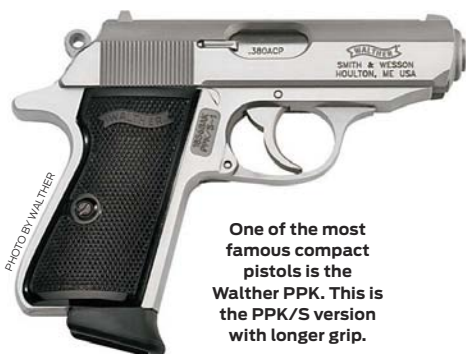
Author's Note: In the last few years, the archery community lost two of its great teachers. Alton Safford (Longbow), who resided in Wrightwood, California, passed away at about age 98 or so. • Joe Dabill, who resided in Atascadero, California, died just last year, a relative youngster in his mid-60s. They were both teachers of mine and I miss them very much.



The 380 Auto Bersa Thunder is an economical and reliable pocket pistol.

SMALL, LIGHT, AND FIERCE

CARRY: PORTABLE PROTECTION IN YOUR POCKET Story and Photography by James E. House



One of the most famous compact pistols is the Walther PPK. This is the PPK/S version with longer grip.

Not long ago, I was looking at the display case in a gun store. In the section containing used handguns, there were some almost new models, mostly large autos in 40 S&W and 45 Auto calibers. I made some comment to the dealer about the handguns and was told most had been traded in for something smaller. The dealer's comment was that "everyone wants one of these until they carry it for a while and then reality sets in and they want smaller handguns."

The truth is that unless the handgun is part of the gear required in a job description, most people do not want to carry a two-pound handgun on a regular basis. Moreover, a small handgun fits better in concealed carry, an

The handgun calibers for protection are (left to right) 380 Auto, 9mm Luger, 40 S&W, 45 Auto, 38 Special and 357 Magnum.

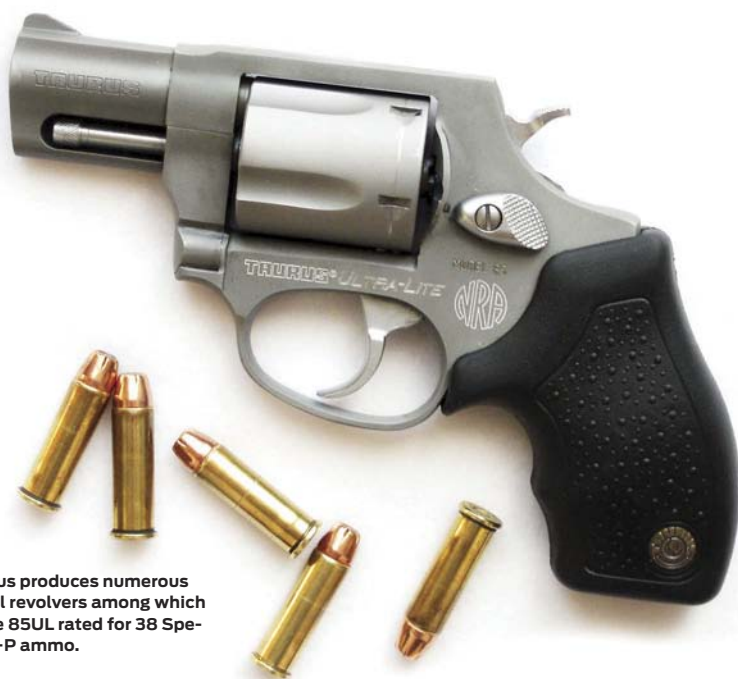


emergency kit, or a backpack. The desirability of a small handgun is based on practical considerations, and the same characteristics that make a pocket handgun a good choice for carry also make it a good choice for nightstand duty. Whether an autoloader or revolver is the small handgun chosen depends on the personal preference of the user.

THE SMALL HANDGUN

Having concluded a small handgun is the right tool to have available, what are some of the practical considerations? The first is the choice of type of handgun because that will dictate the choice of caliber. Assuming an autoloading handgun is being chosen for its defensive capability, the logical caliber choices are the 380 Auto and 9mm Luger. A recent FBI report based on analysis of a lot of data obtained from cases in which a handgun was used concluded the 9mm fared about as well as the 40 S&W and 45 Auto. The conclusions were based on the effects produced by the bullets and the controllability of the handguns.

Having tested some of the modern 9mm defense loads, the results came as no surprise to me. However, the same high tech principles that have elevated the performance level of the 9mm Luger have also been applied to the 380 Auto making it far more effective than it was a few years ago. My wife and I tested some of the premium 380 ammunition and it provides impressive performance. The 380 Auto today is probably as effective as the 9mm was a generation ago. A 380 Auto represents about as much



Taurus produces numerous small revolvers among which is the 85UL rated for 38 Special +P ammo.

recoil and blast as many shooters will tolerate and control, and those attributes are significant when shooting some of the tiny 380s.

THE RIGHT AMMO

When it comes to compact revolvers, the 38 Special and 357 Magnum get the nod. The 32 H&R Magnum and the 327 Federal simply have not caught on, and some gun makers who introduced models in these calibers have discontinued them. If the revolver has a barrel

SMALL, LIGHT, AND FIERCE

"EVERYONE WANTS
ONE OF THESE
UNTIL THEY CARRY
IT FOR A WHILE
AND THEN REALITY
SETS IN AND THEY
WANT SMALLER
HANDGUNS."

The S&W Model 60 has adjustable sights and can handle any 38 Special load.

length of three inches or less, the blast and recoil of a full power 357 Magnum are going to be very severe, likely so severe that most shooters will not become proficient with the gun. The word I hear from dealers who sell small revolvers for discrete carry is that they are almost always loaded with 38 Special or 38 Special +P ammo rather than magnum rounds. Frankly, I prefer a 380 Auto or 38 Special handgun rather than a magnum because such guns are at least moderately comfortable to shoot.

Of course there are other possible calibers for both compact revolvers and autoloaders, but those mentioned are encountered in the vast majority of compact handguns that are of a size that allow them to be carried in a pocket. One reason is the wide range of handguns in those calibers. The number of models available in 380 Auto is very large and it seems that new models are introduced frequently. Most are fixed barrel models operating on a simple blow back design. Pistols more powerful than the 380 (such as the 9mm Luger, 40 S&W, and 45 Auto) are designed so the barrel and slide are locked together at the time of firing. The result is that a 380 Auto pistol is not simply a scaled down version of a more powerful pistol.

Small 38 Special revolvers have been around for a very long time. For many years, the small frame Smith & Wesson Model 36 Chief's Special and the Colt Detective Special were



One of the advantages of a revolver is that its condition can be seen at a glance.

popular sidearms for off duty officers or civilian defense. Although Colt is out of the business of making small revolvers, such guns are still produced by Smith & Wesson, as well as by Charter Arms, Taurus, Rossi and others. Models are available in both 38 Special and 357 Magnum calibers holding either five or six cartridges. The S&W Model 36 has been discontinued, but the stainless steel Model 60 is a similar gun with a three-inch barrel, and it can be obtained with other features such as adjustable sights, target hammer and target trigger. The current S&W Model 60 is chambered for the 357 Magnum, but it also works well with all 38 Special loads.

Although a three-inch barrel is more versatile, a wheel gun with a two-inch barrel is also suitable for short range defensive situations. Numerous models are available from the major manufacturers. My current compact gun is a Taurus Model 85UL rated for +P 38 Special loads but weighs only about 17 ounces. Not an accurate target arm, the 85UL is nevertheless sufficiently accurate for defense use and it has proven to be completely reliable.

DOUBLE ACTION VS. AUTO

When it comes to compact autoloaders, my preference is for one of the double action models that has an external hammer so it can be cocked manually for single action shooting. The most common calibers for such guns are 380 Auto and 9mm Luger. In order to function reliably, most autoloading pistols must be used with essentially full power loads. As a result, my preference is for a 380 Auto because the 9mm operates at a pressure of approximately 35,000 pounds per square inch so it generates a lot of blast from a short barrel. Pistols chambered for the 9mm are available with barrels as short as three inches. My own 9mm pistol has a four-inch barrel and I would not want to shoot full power loads from a shorter barrel.

As mentioned earlier, the choice of pistols chambered in 380 Auto is very large. At the top of my list is the famous Walther PPK, primarily because of the overall style and the fact that it





A wide variety of premium ammunition is available in 380 Auto. Shown here are (left to right) Federal, Fiocchi, Hornady and two Winchester loads.

is very comfortable in my hand. However, pistols of the same basic configuration are available from Bersa, and the one that my wife has functions flawlessly while costing less than half as much as the Walther. A less expensive option is the Walther PK 380, but all major manufacturers produce pistols in 380 Auto caliber. Glock recently entered that market and Ruger offers some diminutive 380 pistols. Colt produces the tiny Mustang autoloader in 380 caliber. In order to make an appropriate choice, the shopper should visit a dealer with numerous models available and see what feels good in the hand with conveniently operated controls. Many 380 Auto pistols have no hammer and have a striker firing mechanism that operates simply by pulling the trigger.

Recently, I have been reading a book called *Gun Talk*, edited by Dave Moreton (Winchester Press, 1973). The book is an anthology consisting of 17 articles written by noted firearms authorities. An article on handguns was written by the late Major George Nonte and deals with numerous aspects of handgun use. At one point (page 144), when dealing with selection of a handgun for protection, Nonte states "...I'd give him (her?) a Smith & Wesson Model 36 ... with a three-inch barrel, and loaded with 38 Special 148-grain wadcutter ammunition. As a second choice, I'd make it a 380 Walther Model PP and standard factory ammunition."

More than 40 years later, that is still good advice with respect to the types of firearms and calibers, but there are currently many more models from different manufacturers to choose from. For defense situations, it is hard to select more appropriate handguns than those recommended by Nonte. **ASG**

"...I'D GIVE HIM (HER?) A SMITH & WESSON MODEL 36 ... WITH A THREE-INCH BARREL, AND LOADED WITH 38 SPECIAL 148-GRAIN WADCUTTER AMMUNITION. AS A SECOND CHOICE, I'D MAKE IT A 380 WALTHER MODEL PP AND STANDARD FACTORY AMMUNITION."



These 380 bullets that expanded in water are (left to right) Federal Hydra-Shok, Hornady Critical Defense and Winchester PDX1.



Even when fired from the two-inch barrel of the Taurus, the Winchester Silvertip shows impressive expansion.

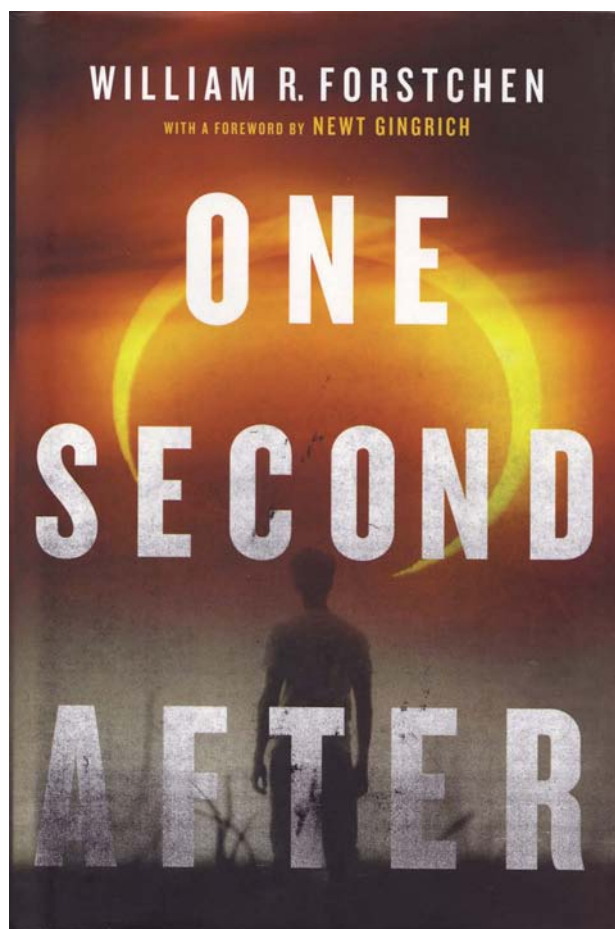
One Second After

by William R. Forstchen | Review by J.D. Hughes

Newt Gingrich, William Forstchen's co-author on a number of alternate history novels, sets the tone for *One Second After* with his forward to the book. "Though this book is a work of fiction, it is also a work of fact. Perhaps a future history, that should be thought provoking and yes even terrifying for all of us."

Whether you live in a bunker or are just an arm-chair survivalist, if you haven't read William R. Forstchen's *One Second After*, you are doing yourself a disservice. Unlike so much survival fiction, this book is not a poorly written political soapbox or a how-to manual disguised as fiction. Forstchen's novel is as solid as it gets. *One Second After* deals with the trials and tragedies suffered in the small town of Black Mountain after an EMP attack disables the North American electrical grid.

Professor John Matherson, a retired Army officer, lives in Black Mountain with his daughters and dogs, teaching at the local Montreat College. What starts as an average day quickly spirals downward when all electrical appli-



ances, cars and cellphones suddenly cease to function. There follows the struggle of Matherson and the town to survive over the next year. Focusing in on the basics, Forstchen narrates the plight of the people of the town as they soon realize they have

been thrust back to a 19th Century level of existence, without the skills or tools to manage.

Forstchen doesn't shy away from hard truths. The characters in the book aren't preppers with stockpiles of food and ammo; they are average Ameri-

cans dependent on a system of modern conveniences. With scenes of looting, violent clashes with intruders, and personal tragedies, Forstchen manages to touch on the reality of what could happen in a total societal collapse. With excruciating detail, Forstchen describes the fall of our modern society with scenes of the elderly abandoned in care facilities, the ill running out of their prescriptions, and the gradual starvation as parents go hungry to feed their children.

The author, a resident of the actual Black Mountain, uses his intimate knowledge of the town, its residents, and the surrounding geography to paint a believable portrait of small town America at its best and worst. The afterward by Cpt. Bill Sanders (USN), gives a brief technical description of the science behind EMP and describes how recommendations and warnings of the EMP Commission were largely ignored when the report was released the same day as that of the 9/11 Commission.

Where will you be *One Second After*? **ASB**

AD INDEX

APRIL 2015

ADVERTISER	PAGE
Adam & Eve/PHE, Inc.	15
Del-Ton	19
Ground EFX	33
Hero T-Shirt Club/ Fructhman Marketing .	71
Kershaw Knives	2
LifeStraw	131
Major Surplus & Survival	8-9
Nitro-Pak	3
Preppercon	103
Rock River Arms	31
Sport Manufacturing Group	81
Sturm, Ruger & Company, Inc.	132
Survival Bags Inc.	129
Tactical Night Vision Company	7
Tormach LLC	129
Ultra Holdings	109

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Bleeding to Death

Survival situations don't always have a happy ending. A simple slip on a wet rock could lead to a compound fracture, or a trip on a root might result in being impaled on your own walking stick. You are bleeding severely and the tried and true methods aren't working. Called exsanguination, you're bleeding to death, but what's really happening to your body?

In a situation of severe bleeding, the body tries to maintain blood pressure and blood flow to the most vital organs: the brain, heart, and lungs. This pressure is maintained mainly by squeezing all the main

blood vessels in a process called vasoconstriction. Blood is now shunted away from the skin, limbs, and intestines, which is why a victim's limbs become cold and bluish from the lack of fresh, oxygenated blood.

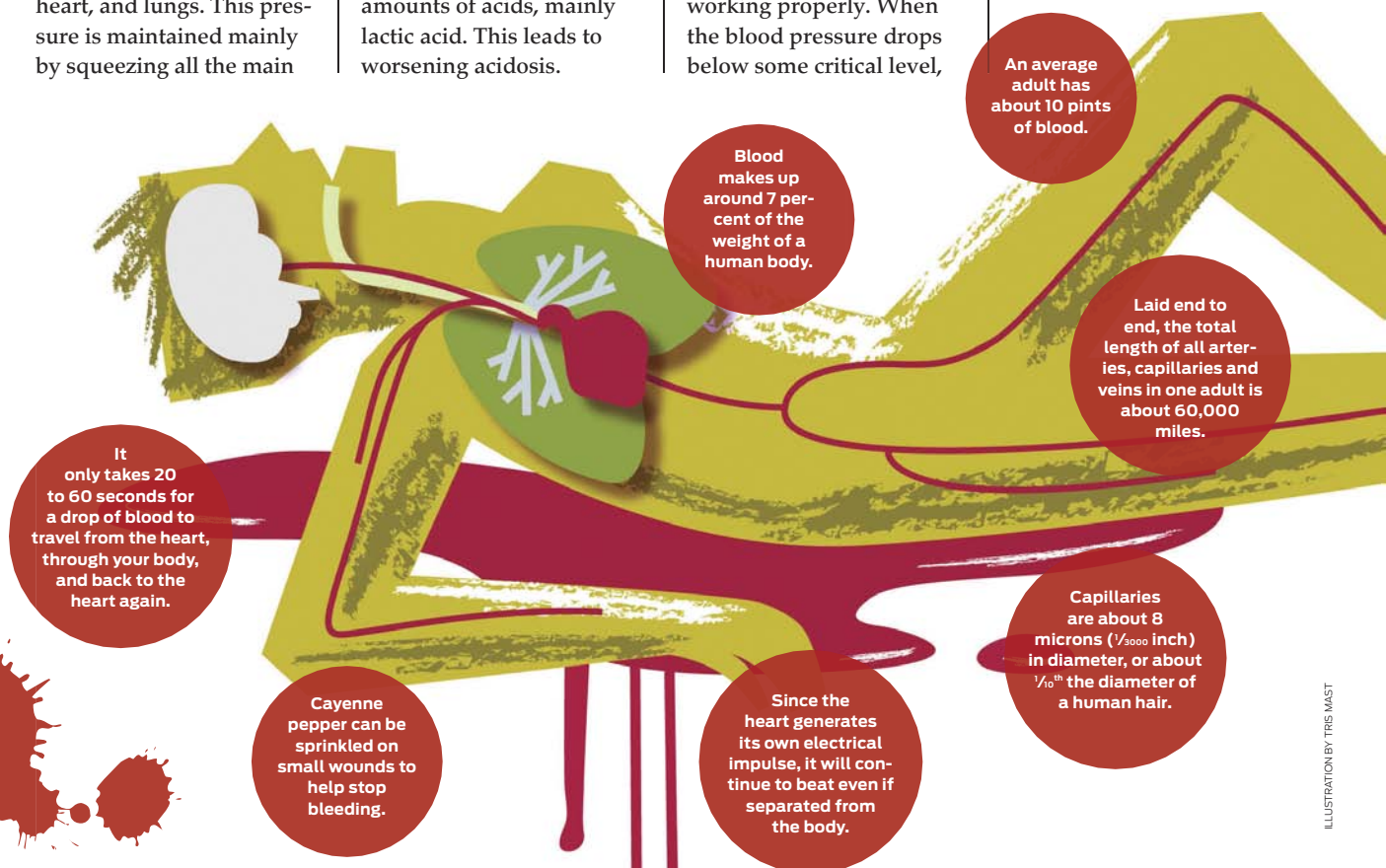
As the body struggles to maintain blood pressure, the total amount of blood flow and oxygen supply decreases to the rest of the body. If deprived of enough oxygen over a short period of time, cells in the body begin to use their fuel without oxygen in an inefficient manner that produces huge amounts of acids, mainly lactic acid. This leads to worsening acidosis.

Realizing that something is wrong, the victim will become hypotensive and restless from the lack of oxygen and blood to their brain. Their heart rate will increase, but their pulse will be weak because the heart tries to keep the blood pressure up. The person starts to feel anxious; something is very wrong. Panic sets in.

As the bleeding continues unabated, the amount of blood allowed to circulate continues to drop, and acid levels will skyrocket. Eventually, the acidosis will prevent the heart from working properly. When the blood pressure drops below some critical level,

which is going to be a little different for each person, the heart starts to go into an electrical disturbance called a cardiac arrhythmia. The heart essentially stops and the quick spiral to death ensues.

If a simple, small blood vessel was cut and neither pressure nor a tourniquet was applied, it could take many hours to bleed to death, but if a major artery was severed — jugular, aorta, etc. — it would take just a few minutes to bleed to death. **ASB**





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